THE EFFECTS OF PLAY AND FANTASY ON CHILDREN'S ANXIETY

By

LYNNE MAGNER McDONALD

A DISSERTATION PRESENTED TO THE GRADUATE COUNCIL OF
THE UNIVERSITY OF FLORIDA
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

1975

To Granny Mag

ACKNOWLEDGEMENTS

I would like to thank the members of my supervisory committee for their help with this project.

To Dr. Vernon Van De Riet go my special thanks for serving as the chairman of my committee and for his support through this project and the last four years. My special appreciation goes to Dr. Eric Jackson who donated many hours of his time to this project and without whose help and support it could not have been accomplished. I would also like to thank Dr. Lawrence Severy for his help with the data analysis and also his support and interest in this research. To Dr. Audrey Schumacher and Dr. Jacquelin Goldman go my thanks for their invaluable help in the formative stages of this project in conceptualizing the problems and issues.

There are many other individuals who contributed significantly to this project. I would especially like to thank Carole Harris, Barbara Duemler, and Cynthia Gaskin who spent many hours testing children and serving as experimenters. Thanks also go to Jamie Jackson for his help early in the project. To Paula Magner and Phil Bruner go my thanks for their assistance in rating tapes as well as with many of the mechanical aspects of doing research.

I would also like to acknowlege the individuals and organizations who made it possible for children to participate in the study. The cooperation of the Alachua County School System and the P. K. Yonge Laboratory School was greatly appreciated as was the cooperation of the several preschool directors. A special thanks goes to Ann Strickland of the Andromeda School.

Most importantly, my thanks go to each of the parents who allowed their child to be a part of this study and to each child. Without this cooperation, none of this could have been done.

To Tom, goes my appreciation for being there when I needed him.

TABLE OF CONTENTS

Page

ACKNOWLEDGEMENTS iii

LIST OF TABLES vii

ABSTRACT ix

CHAPTER

I INTRODUCTION 1

- Fantasy Play in Perspective 3
- Review of the Literature 5
- Derivation of Hypotheses 21
- Specific Hypotheses 23

II METHOD 25

- Overview 25
- Design 26
- Sample Selection 31
- Pre-Experiment Evaluation 34
- The Experiment 41

III RESULTS 56

- Preliminary Analyses 56
- Primary Analyses 66
- Additional Analyses 73

IV DISCUSSION 80

- Summary of Results 80
- Validity of Anxiety and Fantasy Measurement 82
- Results of the Picture Test 83
- The Experimental Situation 86
- Additional Results 91
- Conclusions 92
- Suggestions for Future Research 94

Page

APPENDICES 96

A ANXIETY MEASURES 97

B THE TOYS 101

C ANALYSES OF VARIANCE AND RELEVANT DATA 103

D ANALYSES WITH TOY AND PLAY VARIABLES 113

E COMPARISON OF PICTURE TEST AND TOY PREFERENCE SCORES PRE-EXPERIMENT TO PRETREATMENT (t_1 to t_2) 119

F CORRELATIONS OF PARENT AND CHILD ANXIETY .. 121

G DESCRIPTION OF DENTAL PROCEDURES 123

BIBLIOGRAPHY 125

BIOGRAPHICAL SKETCH 127

LIST OF TABLES

Table		Page
1	Description of Experimental Groups	29
2	Means, Standard Deviations, and Intercorrelations of Fantasy Measures	57
3	Means, Standard Deviations, and Intercorrelations of Anxiety Measures	59
4	Fantasy and Initial Anxiety by Experimenter	62
5	Latency and Anxiety Picture Test (Posttreatment) by Experimenter	64
6	Anxiety by Subject Familiarity with Experimenters	65
7	Measures and Time Assessed	67
8	Means and Standard Deviations of Posttreatment Anxiety Measures by Group	69
9	Comparison of High and Low Fantasy Groups on Picture Test (t_1, t_2, and t_4)	74
10	Correlations Between Age and Fantasy and Anxiety Measures	76
B-1	The Toys	102
C-1	Fantasy and Play with Four Posttreatment Anxiety Measures	104
C-2	Fantasy and Play with Anxiety Gain Scores (t_2 to t_4)	106
C-3	Fantasy and Play with Anxiety Gain Scores (t_2 to t_4) with Upper and Lower Thirds of Fantasy	106

Table Page

C-4 Fantasy, Play and Sex with Four Posttreatment Anxiety Measures 107

C-5 Fantasy and Play with Four Posttreatment Anxiety Measures with Age Covaried 108

C-6 Fantasy and Play with Four Posttreatment Anxiety Measures with Upper and Lower Thirds of Fantasy 110

C-7 Means and Standard Deviations of Posttreatment Anxiety Measures by Group (Utilizing Upper and Lower Thirds of Fantasy) 112

D-1 Comparison of High and Low Anxiety Groups (by Gain Scores) on Play and Toy Variables 114

D-2 Comparison of High and Low Fantasy Groups on Toy and Play Variables 115

D-3 Comparison of High and Low Anxiety Groups (by Pretreatment Anxiety) on Play and Toy Variables 116

D-4 Comparison of High and Low Anxiety Groups (by Posttreatment Anxiety Standard Scores) on Play and Toy Variables 117

D-5 Correlations of Toy and Play Variables with Anxiety Measures 118

E-1 Comparison of Picture Test and Toy Preference Scores Pre-experiment to Pretreatment (t_1 to t_2) 120

F-1 Correlations of Parent and Child Anxiety 122

Abstract of Dissertation Presented to the Graduate Council
of the University of Florida in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy

THE EFFECTS OF PLAY AND FANTASY ON CHILDREN'S ANXIETY

By

Lynne Magner McDonald
December, 1975

Chairman: Vernon Van De Riet
Major Department: Psychology

Psychoanalytic and Piagetan theories of play suggest that children use play, specifically fantasy play, to reduce anxiety through the process of assimilation. The purpose of this study was to investigate hypotheses derived from these theories and from previous research on fantasy predisposition in children.

It was hypothesized that children allowed to play freely prior to an anxiety-arousing event would be less anxious about the event than a control group not allowed to play. Related to this, it was predicted that children more highly predisposed to engage in fantasy (high fantasy) would use the free play opportunity more effectively than low fantasy children. It was also predicted that the children who engaged in the most anxiety-related fantasy play would be the least anxious and that there would be a negative correlation between anxiety scores and amount of anxiety-related fantasy play.

In order to test these predictions, 44 middle-class children between four and six years of age who had no previous dental experience participated in a procedure designed to be anxiety-inducing (their first dental examination). Prior to the procedure, children were assigned to high and low fantasy predisposition groups on the basis of scores on three fantasy measures and then randomly assigned to free play and non-free play conditions.

Play condition children were allowed to play freely with a selection of dental and nondental toys for six minutes prior to their dental examination, while the non-play children were engaged in a constructive task designed to inhibit fantasy activity. Anxiety was measured both before and after the experimental treatment, utilizing a self-report measure, two rating scales and a latency measure. Play behavior was categorized as manipulative, fantasy, or creative/constructive from videotapes of play sessions, and all fantasy play was scored for the presence of dental-related themes.

Results did not support the experimental hypotheses. Only fantasy predisposition had a significant effect on anxiety, with high fantasy children, across play conditions, reporting themselves as less anxious. This result was discussed as possibly reflecting differences between high and low fantasy children in their willingness to report anxiety.

Children, overall, engaged in relatively little fantasy play (13%)—with high fantasy children engaging in significantly more fantasy play than low fantasy children—and very little anxiety-related fantasy play (5%). This result was discussed as it relates to the issue of play as assimilation along with the possibility that significant results failed to emerge as a result of so little fantasy play.

It was concluded that the anxiety induction procedure was somewhat less effective than anticipated resulting in a concentration of anxiety scores at the positive end of the distribution. The effect of this as it may have contributed to a lack of significant results was discussed.

Finally, results were discussed as they relate to the general issue of how children cope with anxiety, and suggestions for further research were made.

CHAPTER I

INTRODUCTION

The purpose of this study is to examine some of the assumptions about children's play and its relation to anxiety that are basic to the psychoanalytic and Piagetan theories of play, assumptions widely accepted by those who write about play and those who use play therapeutically. The major assumption to be examined is that the child uses play, specifically fantasy or make-believe play, to cope with anxiety. While this assumption is closely associated with the psychoanalytic view of play as originated by Freud (1958, 1959), summarized by Waelder (1933) and elaborated and modified by later psychoanalytic writers such as Pellar (1952, 1954) and Erikson (1963), it is also a central part of Piaget's (1962) work on symbolic play. Also, this function of play receives mention by most of the writers on play who are primarily concerned with the wider implications of play for cognitive functioning and development (e.g., Singer, 1973; Klinger, 1969, 1971; Millar, 1968).

While there is general agreement that play can provide the child with a way of coping with and presumably reducing anxiety, little has been done in the way of examining this process experimentally. This study was undertaken to explore this process.

Prior to a discussion of the relevant literature and in order to place this study in perspective, recognition must be made of the trend in play research, specifically with respect to fantasy play, being generated from a view of play as a cognitive skill and as an integral part of the child's development of adaptive and creative responses to his world. While there is a place in this conception of fantasy play for play as a coping mechanism, this is only one aspect of a broader view of play behavior. Changes in the psychoanalytic view of play from Freud through Erikson reflect this broadening of the conception of play. A view of play as a response to some felt deficiency or traumatic event has been replaced by a conception of play as an important ego function. Research reflecting this view of play is exemplified by the work of Jerome Singer and his colleagues (1973). While the present study focuses narrowly on the role of play in anxiety, the work of Singer (1973) contributed in important ways, particularly in the recognition of individual differences in the use of fantasy.

Fantasy Play in Perspective

While there are many definitions and types of play behavior, for the purposes of this study, the focus is on the solitary, fantasy play of the preschool child. Fantasy play is seen as a developmental stage in play behavior. Piaget (1962) describes symbolic play as a stage between the exercise or practice play of the infant and the games with rules of the middle childhood period. He also describes the development of symbolic play from the relatively simple generalizations of sensori-motor behavior patterns to new objects of the very young child through the development of complex symbolic combinations and finally to the tendency toward greater realism and less distortion as symbolic play approaches the adaptive behavior of the older child.

This developmental sequence is also described by Amen and Rennison (1954) as a progression from manipulative to fantasy to creative/constructive play during the childhood years.

For the purposes of this study, Piaget's games with rules and other social forms of play are not being considered although it is recognized that they serve important functions for the child and that fantasy play is often social in nature.

Although there is support for the notion of developmental stages of play from the observations of Piaget, the research of Amen and Rennison (1954) and such recent studies as Eifermann (1971), there is an unsettled issue of what becomes of fantasy play as it becomes decreasingly evident in the behavior of the older child. Both Singer (1973) and Klinger (1969, 1971) suggest that there is some kind of continuity between the fantasy play of the child and the fantasy activity of the adolescent and adult.

The focus in this study on fantasy play results from the almost exclusive attribution of anxiety-reducing properties to this type of play in theory. However, a study by Rutherford and LaVoie (1973) suggests that other types of play may be used by the child for coping with anxiety. Thus, the focus on fantasy play is not to the exclusion of the other types of play activities engaged in by preschool children, that is, manipulative or practice play and creative/constructive play as discussed by Piaget (1962) and Amen and Rennison (1954).

While Chapter II provides a detailed description of each of these three types of play, they will be described briefly here. Fantasy play consists of play activity in which there is a distinct make-believe or pretend component, that is, in which the child acts "as if." Creative/constructive play activities are focused around the reproduction or creation of objects with some concern for their realism or uniqueness. Finally, manipulative play includes activities in which the child handles or manipulates objects in standard ways or manipulates his body through movement and exercise.

Although there are recognizable difficulties in attempting to define what is meant by the term play, Klinger (1971) proposes a definition which is a useful way of conceptualizing the play activity of children within the context of this study. He states

> Play is defined here as behavior other than (a) consummatory behavior, (b) instrumental behavior leading detectably to consummatory behavior or to a detectable goal extrinsic to the play activity itself, (c) competition with a standard of excellence, (d) socially prescribed, institutionalized, or ritual behavior when it occurs in the context in which the prescription is socially sanctioned and enforced, and (e) behavior constrained by the requirements of social interaction. (1971, p. 20)

Thus, play is seen as intrinsically motivated behavior, it is engaged in for its own sake, and it is not restricted by excessive external demands.

Review of the Literature

Play Theory

There are two major theoretical views of play which deal specifically with the relationship between play and anxiety. One comes out of the psychoanalytic tradition and the other from the work of Jean Piaget. Both theories concern themselves with how the child can use play to deal with unpleasant emotions as well as more generally with how play can be used by the child to make sense out of his world, or assimilate it.

In discussing play, Freud (1958, 1959) describes two forms it can take. One is wish-fulfillment. The child can "hallucinate" what he needs for momentary gratification and reduce his drive state. The second form of play is seen as similar to the repetition compulsion Freud describes in traumatized adults. Situations that are unfinished because they were too overwhelming exert a pressure to be re-experienced until they are mastered. According to Waelder's (1933) article on the psychoanalytic theory of play, "Play must be a process like a repetition compulsion, by which excessive experiences are divided into small quantities, reattempted and assimilated into play" (p. 217). As mentioned by Waelder, an important aspect of the process of assimilation is the child's freedom in play to alter such experiences by changing outcomes and roles of participants, thus making them more acceptable. As will be seen, this conception of play is similar to the one offered by Piaget (1962).

Psychoanalytic writers since Freud have made some modifications of his theory, expanding the concept of play to include defensive functions for the child (Pellar, 1952, 1954) and finally recognizing that play may occur without the existence of intrapsychic conflict (Erikson, 1963).

Erikson states, ". . . child's play is the infantile form of the human ability to deal with experience by creating model situations and to master reality by experiment and planning" (p. 222). For Erikson, play offers the child a safe place where he can try out actions free of external demands and also where he can retire to work through insults to his ego. He too sees the changing of roles, specifically, passive roles into active ones, as a primary way the child can experience a feeling of mastery over experiences that were once impossible to unassimilate.

Pellar (1952, 1954) discusses models of children's play which are variations on the theme of changing the passive into the active as she describes play as the repetition and assimilation of experiences that were traumatic or narcissistic insults for the child. Although she is primarily concerned with emotional functions of play, she also acknowledges that play contributes to cognitive development. Both Pellar and Erikson recognize that play can be used by the child to try out action that is unsafe in other situations, including the re-experiencing of unpleasant events and the anticipation of future events. Modern psychoanalytic theory approaches Piaget's (1962) description of play as assimilation of reality to the ego.

Piaget's (1962) discussion of symbolic play describes several stages through which this type of play develops as the child becomes more skilled in the use of symbols. He defines play as basically assimilatory activity and describes ways the child can use symbolic play to deal with material that has been unassimilable, including anxiety-arousing situations. Through the use of liquidating combinations, the child can take an unpleasant event or difficult situation and, " . . . re-live it by transposing it symbolically. When the situation is dissociated from the unpleasantness of its context, it is gradually assimilated by being incorporated in other behaviors" (p. 133). This is very similar to the discussion of play by Waelder (1933).

Another way the child can use symbolic play to deal with unpleasant events is through the use of compensatory combinations according to Piaget (1962). This refers to the child reproducing reality, not as it actually occurred or was experienced, but rather as the child would like it to be. Again, this is similar to Waelder's discussion of how the child can alter outcomes in play and with the general psychoanalytic position that assimilation can be accomplished through changing the passive to active. Thus, the child can transpose an experience where he was the passive victim of someone's action or recipient of their insult so that he assumes the role of the actor. This distortion of reality which is allowable in play not only makes it possible for the child to regain some feeling of mastery over what happens to him, but also the reenactment provides the child with control over the amount of material he feels comfortable dealing with and integrating into his conception of reality.

Through both liquidating and compensatory combinations, the child controls the amount of material he chooses to deal with and is able to fit experiences into his system of meanings, that is, to assimilate them.

Both psychoanalytic and Piagetan theories of play would lead one to expect that when a child is using play for the purposes of assimilation, the content of his play will reflect the nature of the experience that is being assimilated. Also, both would suggest that when a child has experienced or is anticipating an anxiety-arousing event, there will be some attempt made to assimilate it. However, neither is specific about the conditions under which assimilation will be attempted. An exception is Erikson's (1963) notion of play disruption, that is, play will cease if the anxiety aroused becomes too great.

In addition to the theories mentioned thus far, there is another theory of interest because it has implications for the relationship between fantasy play and anxiety. This is Tomkins'(Izard & Tomkins, 1966) cognitive-affective theory.

Singer (1973) discusses the implications of this theory for fantasy and fantasy play and dealing with negative affect, specifically aggression and anger. He suggests that fantasy activity produces a change in affect by providing a stimulus situation that is less intense and therefore less negative than the one previously responded to. This shift away from the more negative emotion constitutes a change in affect or mood and thus, reduces the expression of a particular negative emotion. This follows from Tomkins theory which sees affects as related to the density of neural firings or intensity of stimulation such that changes in gradients of stimulation produce affective changes.

Biblow (1973) tests this theory in his study of aggression in children more and less skilled in the use of fantasy. He found that children skilled in fantasy used an experimenter-produced fantasy experience to reduce their level of aggressiveness following frustration unlike the less skilled children. This was accompanied by significant changes in affect toward either less negative or more positive emotions depending on the type of fantasy provided, aggressive or nonaggressive.

Thus, utilizing this view of fantasy play, one might expect that the content of play need not be specific to the arousing situation. This difference between cognitive-affective theory and the psychoanalytic and Piagetan views brings into focus the question of whether or not assimilation is necessary for a reduction of anxiety to occur. Psychoanalytic and Piagetan theory would suggest that assimilation is necessary although they do not exclude the possibility that temporary relief of anxiety may be achieved in other ways. However, one would expect to see, in general, children dealing with anxiety through play, particularly fantasy play. The cognitive-affective theory would suggest that fantasy may reduce anxiety without assimilation necessarily occurring or being attempted.

Again, however, there are many factors which might affect the probability that a child would engage in assimilatory play as yet unspecified by the psychoanalytic or Piagetan theories or research. One aim of this study is to examine how the particular conditions set up experimentally are related to the amount of assimilatory play engaged in by the children.

Fantasy and Anxiety in Adults

Research on fantasy in adults has concentrated largely on reports of daydreaming and is discussed in detail by Singer (1966). Although the relationship between fantasy play in childhood and fantasy in adults has not been empirically established, Klinger (1969, 1971) argues, from available evidence, that there are basic similarities between the two activities. Singer (1966, 1973) suggests that there is reason to see imaginative play as the beginning of fantasy activity and to believe that this play becomes internalized in the form of daydreams in adolescence and adulthood. To the extent that fantasy play and adult fantasy are related, research on adult fantasy can be used to draw inferences about children's play. There are obvious limitations in doing this, but an examination of adult research may, at least, suggest some areas of interest.

There are two studies which bear on the question of how fantasy activity relates to anxiety in adults.

A study by Singer and Rowe (1962) looked at the effects of daydreaming on anxiety arousal. The authors found that students became more anxious, as measured by a test anxiety questionaire, after an anxiety-arousing experience if they were given some free time to engage in fantasy following the event. Their comparison group was occupied with an irrelevant task. Also, a significant positive correlation was found between daydreaming frequency and a general measure of anxiety. However, there were no differences in reported anxiety between frequent and infrequent daydreamers as had been hypothesized. This is an example of fantasy following an anxiety-producing event, an event which still held a great amount of uncertainty for the subjects, and in which fantasy increased anxiety. There was also some suggestion that subjects who engaged in daydreams about the anxiety-producing event were more anxious although this was not statistically significant.

A second study by Rowe (1967) examined anxiety by measuring physiological responses in subjects who were awaiting a painful electric shock. Subjects, when allowed to daydream, showed less elevation in physiological responses during stress than when they were engaged in an irrelevant task which prevented fantasy. Thus, while anticipating an anxiety-producing event, subjects used fantasy to reduce their anxiety on a physiological level. He found no differences in anxiety between high and low frequency daydreamers during resting state, nor did he find that the more freqent daydreamers were able to use fantasy to reduce anxiety more effectively than the low frequency daydreamers.

Together, these studies suggest that adults who are more inclined to use fantasy or admit to using fantasy report being more anxious but that there are no physiolocical differences in anxiety between these and adults who report relatively infrequent daydreaming. They also suggest that fantasy may increase anxiety following an anxiety-producing event whose outcome is ambiguous, while it may decrease anxiety during the anticipation of a relatively unambiguous anxiety-producing event. Neither study provides support for the differential abilities of high and low reporters of fantasy activity to use a fantasy experience to deal with anxiety.

That the reporters of frequent daydreams also report feeling more anxious is consistent with Singer's

(1966) conclusion that "... persons reporting more frequent daydreams also describe themselves as more anxious, sensitive, and fearful"(p. 73). He goes on to state that "The penalty of self-awareness and introspection is the direct confrontation with anxiety"(p. 142). However, both fantasy frequency and anxiety were related only when both were self-reported, and their relation could also be explained in terms of the subjects' willingness to reveal personal information.

Fantasy and Aggression

Brief mention will be made of two studies dealing with the relationship of fantasy to the expression of aggression as they relate to the issue of differentail abilities to utilize fantasy. As mentioned, Singer and Rowe (1962) and Rowe (1967) found no differences between high and low frequency daydreamers in their abilities to utilize fantasy to reduce anxiety.

However, this is not the case of two studies examining aggression. The already mentioned study by Biblow (1973) found that high fantasy predisposed children were able to use a fantasy experience to reduce both anger and aggression while this was not true of the low fantasy children.

Similarly, Pytkowicz, Wagner, and Sarason (1967) found that subjects who reported being frequent daydreamers were able to use a fantasy experience more effectively to reduce their hostility than infrequent daydreamers. Also of interest was the finding that frequent daydreamers did not report daydreams during the study that were aggressive or even anxious. This is similar to Biblow's finding that the content of the fantasy experience did not affect the reduction of aggression. Also, the previously mentioned studies on anxiety found no positive relation between the content of fantasy and reduction of anxiety, suggesting that the use of fantasy to reduce negative affect does not require the fantasy to reflect emotionally relevant content.

The studies on aggression do suggest that an individual's predisposition to fantasy may be important in how well he can use an opportunity for fantasy at least with respect to the expression of aggression.

All of these studies taken together suggest that (1) fantasy can affect negative affective states, (2) there appear to be differences between high and low fantasy predisposed individuals in how they utilize fantasy or in their report of anxiety although the evidence is inconsistent, and (3) emotionally relevant content does not appear to be related to reduction of emotional arousal. However, these conclusions come mainly from research with adult populations and cannot be considered more than suggestive.

Play and Anxiety

Gilmore (1966) carried out a series of three related studies which examined the relationship between children's toy preferences and anxiety. He found that anxiety was related to children's preference for anxiety-relevant toys. In his first study, children who were hospitalized were found to prefer play with medically-relevant toys over nonrelevant toys. In the second and third studies, anxiety was manipulated experimentally with the finding that in one study children chose anxiety-relevant toys for play whereas in the other, they avoided such toys. The author suggests that this difference may be attributable to the fact that in the study where the toys were avoided, children were considerably more anxious. He suggests that moderate levels of anxiety may increase the attractiveness of anxiety-relevant toys where excessive anxiety has the opposite effect.

A study by Rutherford and LaVoie (1973) also examined toy preference as it relates to anxiety, and in addition examined play patterns as they relate to anxiety. Two interviews were conducted with 4-5 year old children, the first, one week to two weeks prior to a medical examination, and the second, a half-hour to an hour prior to the examination. The examination was considered the anxiety-arousing situation. Anxiety was measured physiologically and found to be significantly higher at the second interview as expected. Results of this study indicated that (1) there was a nonsignificant tendency for children to prefer medically relevant toys under conditions of less stress rather than greater stress, and (2) play patterns from first to second interviews indicated increases in creative/constructive play with accompanying decreases in imaginative and manipulative play, particularly in the children who evidenced greater increases in anxiety from the first to the second interview.

A third study using the play patterns adapted by Rutherford and LaVoie was carried out by Amen and Rennison (1954). This looked at the relationship between the three play patterns (manipulative, fantasy, and creative/constructive) and general level of children's anxiety. As mentioned previously, they suggested that the three play patterns represent a developmental sequence. Their results indicated that general level of anxiety as measured projectively was significantly related to children's preferred style of play, positively related to creative/constructive play, negatively related to manipulative play and unrelated to fantasy play.

In summary, these studies provide some preliminary information regarding the nature of play in relation to anxiety. There is evidence that preferences for anxiety-relevant toys are affected by anxiety although the results are contradictory with respect to the direction of the effect.

Additionally, there is evidence that children who are anticipating an anxiety-arousing event tend to engage in more creative/constructive play and less imaginative play than when they are under conditions of less stress.

Finally, there is some suggestion that children who are more anxious generally, that is, who are more aware of their anxiety, spend more time in creative/constructive play than do children who are less anxious.

Overall, these results do not support the psychoanalytic view that children deal with anxiety through anxiety-relevant fantasy play, with the possible exception of two of Gilmore's studies. Rutherford and LaVoie (1973) suggest that children use the interesting and demanding activity of creative/constructive play to control their feelings of anxiety rather than imaginative or fantasy activity.

One of the factors that might be useful in understanding these results is the individual differences in predisposition to use fantasy as suggested by the work of Singer (1973). Certainly, there remains a considerable amount of work to do before any firm conclusions about the relationship between play and anxiety can be made, as very little information has been collected thus far.

Fantasy Predisposition

Although much of the research on fantasy predisposition is discussed in Chapter II where the measures are described, a brief mention will be made here of this work.

Research on fantasy predisposition has been stimulated by the efforts of Jerome Singer and a group of his students (Singer, 1973). They have generally measured fantasy predisposition using a battery of two or more tests administered to children either individually or in groups. Children who score highly on these measures have been found to differ in several ways from low scorers including being able to inhibit motor activity and thus wait for longer periods of time, tell more creative stories, and most relevant to this study, play more imaginatively (Singer, 1973). Biblow's (1973) study, as mentioned, found that children predisposed to fantasy were able to utilize a fantasy experience to reduce anger and aggressiveness while those less predisposed were unable to do so.

Thus, it would appear that this variable might be a significant one in terms of the relationship between fantasy, play, and anxiety.

Anxiety and Dentistry

The dental examination offers a model situation for the study of anxiety because it is socially acceptable to be afraid of the dentist. While the dental literature indicates that most children are cooperative during dental visits, there is little doubt that some anxiety is aroused in most children by an impending dental examination.

In examining children's dental anxiety, research has looked at its relationship to such variables as maternal anxiety (e.g., Johnson & Baldwin, 1968, 1969), previous dental history, and expectation of dental problems (Wright & Alpern, 1971). In general, these studies have looked at children's cooperative behavior during the dental examination rather than actually trying to measure anxiety in the young patient.

Recently, there have also been attempts made to modify children's anxiety regarding dental examinations using various behavioral techniques (e.g., Adelson & Goldfried, 1970; Herskovitz, Liebert & Adelson, 1971). While the present study is not conceived of as an attempt to modify children's dental anxiety, it may have implications for dealing with children in the dental situation. However, the focus is on how children may modify their own behavior and feelings through activity prior to a dental examination.

Derivation of Hypotheses

Because of the relatively contradictory evidence supporting various assumptions about play and anxiety, hypotheses derived from the psychoanalytic and Piagetan theories, although not consistently supported by the little available data, will serve as the primary source of hypotheses for this study. These are derived from the assumption that children in an anxiety-producing situation will use the opportunity to play freely to reduce their anxiety through anxiety-relevant play, particularly fantasy play. It will be assumed that in the time just prior to the anxiety-producing event anxiety-arousal will be highest.

The research on fantasy predisposition is a source of additional hypotheses. The results of the study by Biblow (1973) suggest that children more highly predisposed to engage in fantasy utilize an opportunity for fantasy differently than children less predisposed to fantasy. Thus, it is predicted that this will also be the case for anxiety, that is, that high fantasy predisposition children will be able to reduce their anxiety more effectively than low fantasy children through play. Although the adult research on daydreaming and anxiety does not support this notion, differences in the measurement of fantasy predisposition and anxiety as well as the differences in subjects make any generalizations between the two relatively tenuous.

Also from the fantasy predisposition research comes the prediction that high fantasy predisposed children will engage in more fantasy play than low fantasy children.

With respect to toy preferences, it is hypothesized that toy preferences will be affected by anxiety as found by Gilmore (1966). However, the direction of that effect will remain unspecified.

The data relevant to the issue of whether there is a relationship between predisposition to fantasy and anxiety in general provide contradictory evidence with adults (Singer & Rowe, 1962; Rowe, 1967) depending on the type of anxiety measurement employed. Only the study by Amen and Rennison (1954) deals with general anxiety in children but they do not specifically measure fantasy predisposition. Thus, the null hypothesis that there is no relationship between anxiety and fantasy predisposition is made.

Finally, it is predicted that there will be a relationship between parental anxiety and children's anxiety in the dental situation. This is based on the dental research indicating that maternal anxiety is related to children's behavior in the dental situation (e.g., Johnson & Baldwin, 1968, 1969; Koenigsberg & Johnson, 1972; Wright & Alpern, 1971).

Specific Hypotheses

1. Children who participate in the play condition (i.e., children who are allowed to play freely just prior to the dental examination) will be less anxious during the examination than children in the nonplay condition (i.e., children who are engaged in a constructive task rather than free play).
    - (a) When children are divided into high and low fantasy predisposition groups (high fantasy and low fantasy), within each fantasy group, children in the play condition will be less anxious during the examination than children in the nonplay condition.
    - (b) Within the play condition, high fantasy children will be less anxious during the examination than low fantasy children.
2. Children in the play condition will show smaller gains in anxiety from before the examination to during the examination than children in the nonplay condition.
    - (a) Within fantasy groups, play condition children will show smaller gains in anxiety than nonplay condition children.
    - (b) Within the play condition, high fantasy children will show smaller gains in anxiety than low fantasy children.

3. Children who show smaller gains in anxiety from before the dental examination to during the examination will engage in more anxiety-relevant play.
4. High fantasy children will engage in more anxiety-relevant play and more fantasy play than low fantasy children.
5. There will be an increase in anxiety from a pre-experimental assessment to assessment just prior to the dental examination.
6. There will be differences in preferences for dental and nondental toys from pre-experimental assessment to assessment just prior to the dental examination.
7. Parents' reported dental anxiety will be related to their children's anxiety before and during the dental examination.
8. There will be no differences between high and low fantasy children in anxiety prior to play.

CHAPTER II

METHOD

Overview

In order to examine the effects of play on anxiety, an experimental situation was designed around a dental examination, assumed to be an anxiety-arousing event.

To examine the effects of play, and specifically fantasy play, on anxiety, half of a group of preselected children was given the opportunity to play freely prior to the dental examination, while the other half served as their controls, that is, they were not allowed to play freely. These children were engaged in a constructive task. Anxiety was measured at several times during the experimental procedure and all children received a dental examination as the final step in their participation.

Preselection of children took place prior to the experimental session in order to secure a relatively homogeneous group of subjects with respect to age, verbal IQ, socioeconomic status and dental history.

Following this preselection, children participated in a testing session a few weeks prior to the experimental session. The purpose of this pre-experimental session was to assess children's fantasy predisposition, a variable expected to be important in the child's utilization of a free play opportunity. Also during this session, children's responses to measures of dental toy preference and anxiety were obtained to be compared with their responses to these measures during the experimental session when they were presumably more anxious.

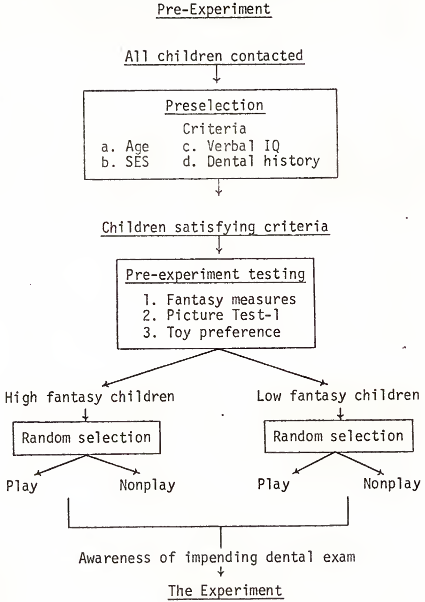
Figure 1 describes these procedures from the selection of children through the experimental session in chronological order along with the measures given at each point in time.

The following pages describe the experimental method and procedures in detail.

Design

Preselected, pretested children were assigned to high and low fantasy predisposition groups by means of a median split of summed standard scores for the three fantasy measures. High and low fantasy predisposition children than were assigned randomly to free play and non-free play conditions. An examination of the groups resulting from the random selection indicated that there were no significant differences (within fantasy groups) in age, sex composition, initial anxiety (Picture Test), or level of fantasy predisposition. Table 1 summarizes the data descriptive of the groups.

Figure 1. Schematic Representation of Procedures


Pre-Experiment
All children contacted
Preselection
Criteria
a. Age
b. SES
c. Verbal IQ
d. Dental history
Children satisfying criteria
Pre-experiment testing
1. Fantasy measures
2. Picture Test-1
3. Toy preference
High fantasy children
Low fantasy children
Random selection
Random selection
Play
Nonplay
Play
Nonplay
Awareness of impending dental exam
The Experiment

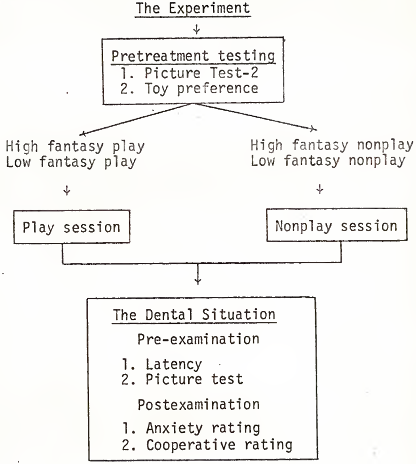

The Experiment
Pretreatment testing
1. Picture Test-2
2. Toy preference
High fantasy play
Low fantasy play
High fantasy nonplay
Low fantasy nonplay
Play session
Nonplay session
The Dental Situation
Pre-examination
1. Latency
2. Picture test
Postexamination
1. Anxiety rating
2. Cooperative rating

Table 1

Description of Experimental Groups

Group	N	Sex		Age (Months)		N of Ss in middle 1/3 of fantasy	Mean Score on Picture Test-1 (Anxiety)
		M	F	$\overline{X}$	SD		
High Fantasy - Play	11	5	6	65.1	6.1	5	1.90
High Fantasy - Nonplay	11	6	5	64.5	7.9	3	0.82
Low Fantasy - Play	11	6	5	59.1	6.9	3	2.64
Low Fantasy - Nonplay	11	6	5	59.1	7.7	5	2.36

This design allowed for a 2x2 factorial analysis of variance for the main effects of Play and Fantasy as well as the interaction. Multiple measures of anxiety posttreatment also made possible a multivariate analysis of variance for these effects.

In addition, this design allowed for a series of planned comparisons between the high fantasy and low fantasy free play groups.

The experimental treatment consisted of providing the opportunity to engage in free play with selected toys for the children in the free play condition while restricting the activity of the non-free play children to working on a structured task selected to be interesting and challenging enough to prevent fantasy activity (puzzles). These activities took place just prior to the child's first dental examination, considered to be an anxiety-provoking situation.

An additional situation made available by the necessity for the pre-experimental session was the intervention between this and the experimental situation of the child's knowledge of an impending dental examination. This provided an opportunity to explore the effects of this awareness on toy preference and the Picture Test measure of anxiety.

Sample Selection

The Sample

The selection of subjects for this study began with a series of screening procedures detailed below. To satisfy the screening criteria, the child had to (1) be between four and six years of age, (2) be a member of a middle-class family, (3) never have received a dental examination, and (4) be of at least average intelligence.

From the screening, it was evident that between 70% and 80% of the children who met the age and social class criteria had previously had at least one dental examination. Only 10% of the children who met the first three criteria were excluded on the basis of the IQ screening.

Children who met the screening criteria were then asked to participate in the pre-experiment testing session. Approximately 60 children completed this testing and of these, 44 were able to participate in the actual experimental procedures and dental examination.

Thus, the final group of subjects consisted of 44 children, 23 males and 21 females.

In addition to the 44 experimental subjects, another group of 10 children was selected from among children who did not meet all the screening criteria to participate in pilot work. Results of this pilot work are reported where relevant.

Screening Procedures

In order to select a relatively homogeneous sample of children for study, an attempt was made to control the following variables: age, dental history, socioeconomic status, and verbal intelligence.

Names of children between the ages of four and six years were obtained from local public school kindergartens, preschools, kindergarten classes and the waiting list for kindergarten at the P. K. Yonge Laboratory School, and from parents living in Married Student Housing who responded to a request for subjects.

Information regarding dental history was collected in telephone interviews with parents, and with the exception of children from P. K. Yonge and Married Housing, information needed to assess socioeconomic status according to Hollingshead's Two Factor Index of Social Position was also collected. Children from families below class III were excluded from further study. Children from P. K. Yonge were already divided into five social class groupings on the basis of income and this information was used to eliminate children from the two lowest classes. Neither of these methods of classification was appropriate for use with the married student population, but all such children were included on the assumption that they were similar to the middle class groups. All of the parents were at least advanced undergraduate students and many were graduate students.

Using only children who had not been to the dentist was done to provide some control over children's expectations. Also parents were informed that the procedure was only an examination (no X-rays or restorative procedures) to provide some control over parental expectations. It was also considered necessary to control for socioeconomic status because of evidence to suggest a relationship between this and fantasy play (Freyberg, 1973). Finally, the age range of children was restricted as much as possible because of the many obvious developmental changes that occur during the preschool period.

In addition to the screening procedures already detailed, it was also considered necessary to control verbal intelligence to some extent. This was done because of the possible dependence of play ratings on verbal expressiveness as well as the unknown relationship between fantasy predisposition and intelligence at the lower end of the distribution.

Unlike the other screening procedures which were completed without the child's involvement, the IQ screening took place during the pre-experiment testing session. The measure employed for this screening was the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) Information subtest. This subtest was selected because of its ease of administration and because it was the one subtest that was most highly correlated with total verbal IQ at all of the age levels. Children who obtained a scaled score of less than 10 on this measure were excluded from further study.

Pre-Experiment Evaluation

Purpose

All children who met the age, social class, and dental history criteria were asked to participate in the pre-experiment testing. This testing had three purposes: (1) to complete the screening of children for verbal intelligence (as described above), (2) to assess levels of fantasy predisposition, and (3) to obtain measures of toy preference and anxiety prior to the child's exposure to the dental examination situation.

Instruments

Fantasy predisposition. Fantasy predisposition was assessed using three measures: Singer's Play Interview, the Transcendence Index (TI) with one card from the Children's Apperception Test (CAT), and movement responses (M) to selected cards of the Holtzman Inkblot Test. Because of a lack of evidence to suggest that any one measure is superior to the others, all three were given equal weight in the assessment.

Singer's Play Interview consists of four questions which inquire into the nature of the child's preferred play activities and other fantasy activities.

The questions as presented to the child are as follows:

(1) What is your favorite thing to play?

(2) What do you like to play best when you are all alone?

(3) Do you ever see pictures in your head? Do you ever see make-believe things in your mind or think about make-believe things?

(4) Do you have a make-believe friend?

These questions were adapted from those of Singer (1973) with very slight modifications in wording. Each question is scored as to whether or not the answer indicates fantasy activity and the examiner is allowed to probe any response for information needed in scoring in a neutral manner such as "Tell me more about it."

This interview has been used in previous studies both alone and as one part of a test battery to assess fantasy predisposition in children (e.g., Singer, 1973; Freyberg, 1973; Pulaski, 1973) and is described by Singer (1973) as useful in discriminating between children who engage in fantasy play and those who do not (p. 61).

The second measure utilizes the Transcendence Index (TI) (Weisskopf, 1950) to evaluate the child's responses to one card of the Children's Apperception Test

(Human). This measure, developed to study the strength of each TAT (Thematic Apperception Test) card in eliciting material not directly descriptive of the stimulus, has been used by Pulaski (1973) in assessing the richness of fantasy productions and found to be related to fantasy predisposition. Gottlieb (1973) also utilized the TI as a measure of fantasy richness and found it affected by modeling procedures as expected in some of her subjects.

Prola (1972) reviews the literature on this measure including both reliability and validity data and concludes that there is considerable support for its continued use as a method for studying fantasy production in response to CAT and TAT cards.

For the purposes of this study, one CAT card was selected (#4 depicting a woman carrying a baby followed by a child on a tricycle) and presented to the child with instructions to make up a story about the picture. The number of transcending elements was counted for each child's story. These elements of transcendence are divided into 11 categories by Weisskopf (1950) in her description of the Index and include (1) temporal transcendence—inclusion of events which occur prior to or after the depicted event, (2) spatial transcendence—inclusion of persons, objects, or events outside the field of vision, (3) relationships—characterization of figures as related, and (4) intraception—ascribing of emotions, desires, thoughts, fantasies, etc. to figures depicted. These categories served as the basis for scoring elements present in the children's stories.

The third measure of fantasy predisposition is the number of movement responses produced in response to ten selected cards of the 45-card Holtzman Inkblot Test (Form A). Movement responses have long been considered a reflection of the richness of one's fantasy life (e.g., Rorschach, 1942) and awareness of inner processes, and Singer (1973) concludes from a review of the literature that, ". . . there seems to be considerable support for at least some of Rorschach's interpretation of the M response as a measure of imaginativeness . . ." (p. 52).

Both Gottlieb (1973) and Biblow (1973) used Holtzman Inkblot M responses as one measure of imaginative predisposition and found relationships between imaginative predisposition and various experimental variables. Pulaski (1973) also used an inkblot test in her measurement of imaginative predisposition and found it related to the child's ability to utilize fantasy in play productions.

The Holtzman Inkblot Test was selected for use in this study because it provides norms for comparing the relative strengths of the cards in eliciting movement (Holtzman, Thorpe, Swartz & Herron, 1961, Appendix E). Such a selection of cards was considered necessary because of the data indicating that children in the age range being used here are not likely to produce many movement responses. Ames, Learned, Metraux, Walker & Hoeber (1952) report developmental norms for the Rorschach indicating that young children can only be expected to produce one or two movement responses (M & FM). Holtzman _et_ _al_. (1961) report an average of 12.9 _M_ for five-year-olds to the 45-card series and this number is not the number of responses but rather is derived from scoring each _M_ response on a scale of 1-4 depending on the intensity of the movement.

For the purposes of this study, the ten selected cards (2, 4, 12, 19, 21, 25, 30, 34, 41, 45) were scored simply for the absence or presence of movement with the expectation that a meaningful range of scores would be obtained.[+]

Anxiety. The anxiety measure employed in the initial testing and repeated before and after the experimental treatment is the Picture Test, a measure developed by Venham (1973) for use with children in dental situations. The measure consists of a series of pairs of drawings of boys in different emotional states with varying degrees of arousal. The emotions portrayed include anger, fear, fear with flight, crying, sadness and happiness.

[+] Responses were also scored using Holtzman's system with the finding of no differences between the scoring methods as to children's positions in the fantasy distribution.

Venham (1973) reports on the development of the measure and includes some validity data on children before and after dental examination. He presents a total of 17 item pairs selected on the basis of their correlation with total test score but reduces his final version of the test to eight items for the sake of saving time in administration.

For the purposes of this study, all 17 items were initially administered to children but this was reduced to 10 items under the experimental conditions due to time and fatigue considerations. Children were presented each pair and asked to select the child that "feels the way you do right now." Scores were calculated by summing the number of times the child selected the member of the pair in the more negative emotional state. A copy of the ten drawings used can be found in Appendix A.

Toy preference. In order to obtain preliminary information as to each child's preferences for dental versus nondental toys to be compared with such preferences just prior to the dental examination, toy preference was assessed during the pre-experiment evaluation. This procedure involved presenting the child with seven pairs of toys, one at a time, and asking him to select the one he would like to play with. Each pair consisted of one toy or collection of similar toys that had no relation to a dental/medical theme and one which was either directly or indirectly so related. The selection and classification of toys was made on the basis of (1) availability of toys, (2) informal interviews with children regarding their association to dentists, and (3) experimenter's intuition. Appendix B contains a list of the toy-pairs.

Pairs were administered in a standard order for all children. Alterations were made in three of the non-dental elements of pairs to make them more appropriate for females and the dolls used were of the child's sex. Prior to the use of these toy pairs, they were presented to a small sample of preschool children to assess the relative attractiveness of each member of the pair. Results indicated that there were no significant differences in the numbers of children that selected each member.

Standard Procedure

The pre-experiment evaluation of children was carried out whenever possible in the child's school. When this was not possible, children were usually tested in a suite of offices located in the University Hospital although a few children were tested in a recreation room within their housing area. All children were tested individually by the author or one of four student assistants trained by the author.

The order of presentation of test materials was (1) WPPSI, (2) Play Interview, (3) Toy Preference, (4) Children's Apperception Test, (5) Holtzman Inkblot Test, and (6) Picture Test. The order of the latter four measures varied somewhat due to limited numbers of the measures when two or more children were being tested at the same time. Total time required for testing ranged from 20 to 40 minutes for children who completed all procedures.

Two children refused to complete the testing, and the results obtained by four children of foreign-born parents were invalidated by their limited understanding of the English language. All other children adequately completed this evaluation, and were asked to participate in the experimental session. Fifteen of these children did not participate either because parents could not be reached to make the necessary arrangements or because scheduling conflicts could not be resolved.

The Experiment

Physical Set-Up

All children were initially seen in a suite of offices and laboratory space located on the main floor of the Psychology Building at the University of Florida. The space included one large room (used as the waiting room), observable through one-way mirrors from two observation areas. A room adjacent to the observation areas was used for testing.

A videotape recorder and camera were operated from one observation area during the free play condition runs. The second observation area was equipped with an audio tape recorder to record verbal descriptions of free play behavior and was set up to monitor sound from the waiting room.

The waiting room was equipped with a chair for the parent who accompanied the child, and in the non-free play condition with a child-sized table and chair.

The Dental Clinic was located below the laboratory space, accessible by a stairway and elevator, and consisted of a large waiting area and several examination rooms. All dental examinations for this study were carried out during times outside of the Clinic's regular operating hours and in one examination room.

The examination room was equipped as a standard examining room with a portable videotape unit placed so that all dental examinations could be recorded.

Materials

In addition to the toys that comprised the toy preference measure, selected toys were added to provide each child in the free play condition with a variety that would allow the expression of active as well as constructive play behavior. Appendix B contains a listing of all toys available to children along with a designation of their type. A total of 17 toys was made available to all children in the free play condition with some of these being single objects and others being a collection of related objects. All toys were placed in the waiting room in a low-cut cardboard box.

Children in the non-free play condition were given puzzles to work on instead of the free play session. Two 25-piece puzzles were selected for this purpose. On the basis of information obtained when trying out the experimental procedures with a group of the pilot children, certain modifications in the puzzle presentation were made. Because of the great variability in puzzle-working ability observed, several pieces of the first puzzle were glued together to reduce the complexity of the task so that all children could come close to finishing it in the alotted time. In addition, for the faster-working children, the second puzzle was made available if they finished the first one.

Instruments

Toy preference. The toy preference measure employed in the experimental session was a repetition of the measure used in the pre-experiment testing. Again, toys were presented in a standard order for all children. The only difference in administration besides the child's being told that a dental exam was impending, was that the pairs of toys were drawn from the larger group of all toys to be used in the play condition. The purpose of this was to provide the child with some exposure to the toys to be added so that novelty would be less of a factor in the choice of play materials. Also, the three toys added were ones that, probably, were already familiar to the children.

Children's anxiety. In addition to the Picture Test already described, three measures were employed to assess the child's level of anxiety at the time of the dental examination. While the Picture Test can best be conceived of as a self-report measure of anxiety—that is, of the child's description of his subjective state—the other measures reflect behavioral aspects of anxiety and were developed for use in this study.

(a) Development of anxiety measures.

In addition to the Picture Test, it had been decided that a behavioral rating scale of cooperativeness developed by Frankl, Shiere, and Fogels (1962) would be used as an index of anxiety as it had been used in previous dental research (e.g., Johnson & Baldwin, 1968, 1969; Wright & Alpern, 1971). However, in using this measure with a group of five pilot subjects it was found that the measure was too insensitive to adequately reflect differences in children's responses to the dental examination.

A decision was made by the author and the dentist-rater (an individual knowledgable in the field of the psychological aspects of dentistry and particularly fear and anxiety) to replace this measure with a scale that could be used to more adequately discriminate among children's behavior. This resulted in the use of two continuous scales to rate both cooperativeness and anxiety.

In using these scales with another group of pilot subjects, it was found that a more meaningful range of scores was obtained and the dentist believed that these measures more adequately reflected differences in observable behavior among the children. It was also believed that these two ratings, cooperativeness and anxiety, could be distinguished sufficiently to make both useful pieces of information about the child's response to the examination.

A final measure was introduced at the time the rating procedure was changed. This was a latency measure of the time it took the child to respond to a request that he enter the examination room. In using this measure with a group of pilot subjects it was found to produce a considerable range of scores.

The inclusion of all four measures, the Picture Test, ratings and the latency measure, was expected to produce a more complete picture of the child's overall response to the dental examination. Also, it was an attempt to consider more than one aspect of anxiety, believed by most researchers to be a multi-dimensional concept. Lazarus and Opton (1966) discuss the presence of subjective phenomenological and behavioral manifestations of anxiety as well as physiological aspects. These four measures offer ways of looking at all but the physiological aspects.

(b) The Measures.

Two rating scales were employed to assess the overall response of each child to the dental examination with the dentist serving as the rater. Each child was rated along a continuum from least to most anxious child he could imagine and from least to most cooperative child he could imagine. Appendix A contains a copy of the scales. Both scales were printed on the same side of a sheet of paper with the positive end of the anxiety scale to the right and the positive end of the cooperativeness scale to the left. The child's score on this measure was figured as the proportion of the five-inch line contained between the most positive end and the child's placement by the rater.

The Latency measure consists of the number of seconds that elapsed between the child's being asked to come into the examination room and his making contact with the dental chair. Because it was expected that some children would not enter the examination room without their parent (based on experience with pilot children), the procedure was designed so that this would be reflected in the timing. It was expected that children's scores on this measure would be a reflection of their reluctance to participate in the examination and related to their anxiety.

Parent anxiety. In order to obtain some information regarding parents' dental anxiety, Corah's (1969) Dental Anxiety Scale was given to the parent accompanying the child to complete for himself or herself, and as he or she believed the spouse would respond (if child lived with both parents). This scale consists of descriptions of four dental situations and asks the respondent to indicate which of five alternatives best describes how he or she would feel in each situation. Corah (1969) provides data on reliability and validity of the measure. Appendix A contains a copy of this measure.

Experimenters

In order to run each child through the experimental procedures, two experimenters had significant contact with the child. $\underline{E}_1$ was responsible for assessment of toy preference and anxiety prior to the play/nonplay session. This was conducted by the same female experimenter for all subjects.

$\underline{E}_2$ played the role of the dental assistant which included greeting the child and parent as they arrived in the Clinic, administering the Picture Test and Latency measures, and timing the procedures during the dental examination. Although the intention was to have one female experimenter carry out this role for all subjects, this was not possible. A second female ($\underline{E}_3$) who was familiar with the procedures and who served as an observer for part of the time filled in during the running of six subjects and the author ($\underline{E}_4$) performed this function during the running of the last three children needed to complete the study.

In addition to the experimenters, two observers were employed during the experimental sessions when play condition children were involved. $\underline{O}_1$ operated the videotape equipment and $\underline{O}_2$ provided verbal descriptions of children's play activities to supplement the videotape accounts. The videotape was operated by a male volunteer while one of three volunteers, two female and one male, provided the play descriptions.

Finally, when additional personnel were available, a person was provided to sit with unattended children in the hallway waiting area outside the laboratory and to direct parents to the Dental Clinic.

All experimenters and observers were unaware of the fantasy predisposition levels of the children being studied, and the dentist and dental assistant were unaware of the treatment conditions except as they might have been inferred from the timing of arrivals to the Clinic from upstairs.

Additionally, because it was not possible to obtain a completely different group of experimenters and observers from the group that aided in the pretesting of children, it was decided to use the same individuals, particularly as each of these individuals had pretested the same number of children in each of the four experimental groups.

An analysis of experimenter effects can be found in Chapter III in Tables 4-6.

Standard Procedures

All children:

1. Each child and an accompanying parent are escorted into the laboratory area by the author.
2. The child is asked to join $\underline{E}_1$ in the testing room and is told by $\underline{E}_1$ that he will be asked to do some of the things he did before (i.e., in the pre-experiment testing session) including looking at toys.
3. In the testing room, the child is told that before he goes to see the dentist to have his teeth checked, we want him to do a couple of things like before.
4. Each child is given the 10-item Picture Test followed by the toy preference measure.
5. While the child is being tested, the author meets with the parent accompanying the child and explains the purpose of the research and procedures to be

expected and asks each parent to cooperate in not interacting with the child during the treatment phase and in filling out the Dental Anxiety Scale.

6. Each child is escorted by $\underline{E}_1$ out of the testing room and into the waiting room along with the accompanying parent.

Free play condition children only:

7A. $\underline{E}_1$ places the box of toys from the testing room onto the floor in front of the observation area with the videotape equipment and tells each child that he can play for a few minutes until it is time to see the dentist. The child is asked not to bother his parent who has some papers to fill out for us.

8A. $\underline{E}_1$ leaves the room and each child is allowed to play for six minutes.

9A. At the end of this time, $\underline{O}_2$ enters and tells the child and parent that it is time to go for the dental examination. $\underline{O}_2$ then verbally directs them to the Clinic or to a waiting assistant who walks with them to the Clinic without interacting with parent or child.

Non-free play condition only:

7B. Each child is asked to sit down and work on the puzzle on the table. It is explained to all children that there are some pieces of the puzzle that do not come off the board and that the picture is of a boy in a house. Additionally, each child is told that the second puzzle (on the floor) can be worked only if he is able to finish all of the first one. The child is told to do as much as he can until the E returns.

8B. $\underline{E}_1$ leaves the room and the children are allowed to work on the puzzles for five minutes.[+]

9B. At the end of this period of time, $\underline{O}_2$ enters the room, acknowledges the child's performance and directs parent and child to the Dental Clinic as in 9A.

All children (in the Dental Clinic):

10. The child and parent are met by $\underline{E}_2$ and asked to be seated in the waiting area in a specific location for a minute.

11. $\underline{E}_2$ steps into the examination room and back out into the waiting area and asks the child to come in by himself to see the dentist. (Latency is timed from the end of this request until the child makes physical contact with the dental chair.) If the child refuses to come, $\underline{E}_2$ walks over to where he is seated and again asks the child to come in and motions toward the door. If the child still refuses this request, $\underline{E}_2$ asks the parent to accompany the child.

[+] This departure from the procedure for the free play children was made on the basis of the responses of children during pilot work who became restless after about five minutes of working on puzzles regardless of how much they had completed.

12. After the child is seated in the chair, $\underline{E}_2$ asks him to wait just a minute and $\underline{E}_2$ leaves the room for 75 seconds.[+]
13. Upon the return of $\underline{E}_2$, the child is readministered the Picture Test (10 items) and told that $\underline{E}_2$ will go and get the dentist. At this time the videotape is turned on.
14. The dentist enters after 30 seconds have elapsed and begins the examination. The standard examination consists of looking into the child's mouth with and without instruments and takes about two to three minutes. (See Appendix G for details.)
15. $\underline{E}_2$ asks the parent(s) to come into the examination room and the dentist gives them feedback as to the state of their child's teeth.

Evaluation of Play

All play evaluations were made from videotapes of the play sessions supplemented by taped verbal descriptions. The two main purposes for this evaluation were to examine the relevance of play to a presumed source of anxiety (dental examination), and to examine the type of play engaged in by children under these conditions.

[+] On the basis of pilot work, which suggested that children were responding very positively to the dental procedures, it was decided to allow each child some time alone between events in the examination with the expectation that this would increase anxiety somewhat.

Two methods were used to assess the relevance of play to anxiety. One was a measure of the proportion of time the child spent playing with dental, dental-related and nondental toys. Appendix B contains a listing of the toys and their type. The second measure was the amount of time spent in fantasy play with a dental or dental-relevant theme. Themes considered as dental or dental-relevant included fantasy themes focused on or in the mouth of self, parent or doll; oral themes such as biting, and medical play such as giving injections.

Type of play was assessed by categorizing activity into (1) manipulative/exploratory play, (2) fantasy play, and (3) creative/constructive play (or activity). A category of nonplay was used to designate behavior that was none of the above activities.

The child's time in the waiting room was divided into 10-second segments and raters classified behavior into the above categories on the basis of the predominant type of activity during the segment. Also raters designated fantasy play as to whether it was dental or dental-relevant in theme.

Manipulative/exploratory play includes activities in which the child is manipulating or exploring objects or his surroundings in a playful manner and in ways that cannot be considered fantasy or creative/constructive. This category includes physical activity for its own sake (e.g., jumping rope), looking through the toys, and manipulating toys according to their design (e.g., winding the chattering teeth).

Fantasy play involves activities in which there are pretend or make-believe elements. This includes the use of objects in novel ways, acting as if toys were real objects, use of one's body, with or without props, as if it were something or someone that it is not, and treating inanimate objects as if they were alive.

Creative/constructive play involves activity in which the child is apparently working toward some goal or has some standard in mind that he is trying to reach in his manipulation of objects (e.g., making a realistic house out of blocks).

These categories are similar to the ones employed by Rutherford and LaVoie (1973), although the creative/constructive category is somewhat more limited.

Rating Procedures for Play and Toys

Time with toys. Time spent handling each toy was measured in the following way. Three raters, including the author, $\underline{E}_1$, and a volunteer who had not been involved in the experimental procedures, independently timed the handling of each toy during the six-minute play session. No record was made of toys handled less than five seconds because of difficulty in identifying the toy.

Total agreement was obtained as to the toys handled. The time each toy was handled was obtained by averaging the two closest measurements. Reliability of timing using the two closest measurements was high (r = .95).

Category of play. Two volunteers, who were unacquainted with the fantasy levels of subjects or with experimental predictions were used for the purposes of assessing category of play. They viewed videotapes of play sessions with accompanying audiotapes, and every 10 seconds indicated whether the preceding segment of play fell into the category of manipulative/exploratory, fantasy, or creative/constructive or nonplay. They also indicated whether a segment of fantasy play was dental or dental-relevant in theme.

Judgments regarding this classification were made independently by the raters based on detailed criteria set up by the author. There was substantial agreement between raters on play categories. Out of 777 10-second segments viewed, there was complete agreement on 760. At the points of disagreement, raters gave verbal descriptions of the events in question to the author and a clarification of the criteria was made. On this basis only one disagreement remained.

CHAPTER III

RESULTS

Preliminary Analyses

Prior to a presentation of the primary analyses, the results of some preliminary analyses, including quantitative descriptions of the measures employed and an analysis of experimenter effects, will be presented.

Fantasy and Anxiety Measures

Table 2 presents the means, standard deviations and ranges for the three fantasy predisposition measures with their intercorrelation matrix. An inspection of the data provides an overall picture of how these children responded to the measures. There are also findings of some interest in that they were not completely expected. First, the mean number of M responses to the Holtzman Inkblot Test ($\overline{X}$=5.98) was higher than one would expect from the available normative data on this measure as discussed in Chapter II. The selection of cards for their ability to elicit movement was apparently more successful than expected and may have served to sensitize children to the potentialities for movement in all of the cards.

Table 2

Means, Standard Deviations, and Intercorrelations of Fantasy Measures

Measure	Possible Range	Actual Range	All Subjects $\overline{X}$	All Subjects SD	All Subjects N	High Fantasy $\overline{X}$	High Fantasy SD	High Fantasy N	Low Fantasy $\overline{X}$	Low Fantasy SD	Low Fantasy N
Interview	0-4	(0-3)	1.14	.90	44	1.64	.85	22	.64	.66	22
Transcendence Index	0-UP	(0-21)	4.02	3.47	44	5.64	4.16	22	2.41	1.40	22
Holtzman _M_	0-10	0-10	5.98	2.60	44	7.59	1.89	22	4.36	2.19	22

Intercorrelations

Measure	Interview	Transcendence Index
Interview	—	
Transcendence Index	.3468*	—
Holtzman (M)	.2386	.3192*

*Sig. $p < .02$

The intercorrelations among the measures were not as high as reported in other studies using similar types of measurement (Pulaski, 1973; Freyberg, 1973) with non-parametric correlational techniques. In this analysis, correlations are Pearson _r_'s, and reflect only moderate relationships at best with the correlation between the Interview measure and _M_ responses falling below the .05 level of significance. However, the overall relationships are sufficient to assume some commonality among the measures, particularly when one considers that the small range of Interview scores may limit the size of obtainable correlations.

Table 3 presents similar data for the four anxiety measures. The overall means for the Picture Test indicate that there was very little change over time contrary to what was expected, suggesting the possibilities that the measure is not sensitive to the changes in anxiety that were occurring as a result of the dental examination, that children were in fact not anxious about the examination, or that children were not providing accurate descriptions of themselves through this technique. The data from the Anxiety and Cooperativeness ratings indicate that children were seen as overall not very anxious and generally cooperative. Only two children fell below the positive half of the continuum on either measure. This is not inconsistent with data from dental research studies suggesting

Table 3

Means, Standard Deviations, and Intercorrelations of Anxiety Measures

Measure	$\overline{X}$	SD	N	Range
Picture Test - 1	1.93	2.34	44	0 - 9
Picture Test - 2	1.64	2.32	44	0 - 9
Picture Test - 3	1.79	2.73	44	0 - 10
Latency	19.20	9.96	44	10 - 72
Anxiety Rating	26.61	14.33	44	2 - 72
Cooperative Rating	21.82	13.43	44	2 - 70

Table 3 - continued

Measure		Intercorrelations				
		PT-1	PT-2	PT-3	LAT	AR
Picture Test - 1	(PT-1)	——				
Picture Test - 2	(PT-2)	.6506***	——			
Picture Test - 3	(PT-3)	.4457***	.8230***	——		
Latency	(LAT)	-.0334	.0736	.0708	——	
Anxiety Rating	(AR)	.1145	.4525***	.3436*	.2737*	——
Cooperativeness Rating	(CR)	-.0397	.3755**	.3587	.3517**	.6531***

*$p < .04$

**$p < .01$

***$p < .001$

that the majority of children do not present any management problem to dentists.

The intercorrelations among these measures reveals moderate to high relationships for all but the Picture Test-Latency comparison. These results provide support for combining these measures in certain of the analyses. The relationships of the Picture Test to the two ratings (r=.3436 & r=.3587) are considerably higher than those reported by Venham (1973) in his work with the Picture Test.

Also of note is the high correlation between the Anxiety and Cooperativeness ratings (r=.6531). This highly significant relationship between the ratings may be a reflection of the significant relationship between anxiety and cooperative behavior assumed in some of the dental literature (e.g., Johnson & Baldwin, 1968, 1969) but it is probably also a reflection of the measurement procedure itself, that is, one rater making both judgments at the same point in time and on the same type of scale.

Experimenter Effects

The results of the analysis of experimenter effects are contained in Tables 4-6. There are no significant differences among the mean fantasy and initial anxiety (Picture Test) scores obtained by the five individuals who conducted pre-experiment testing sessions (Table 4).

Table 4

Fantasy and Initial Anxiety by Experimenter

Experimenter	Number of Subjects Tested	Fantasy Measures						Anxiety	
		Interview		CAT (TI)		Holtzman		Picture Test - 1	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
1	9	1.11	0.60	4.55	2.74	5.50	2.35	1.67	1.41
2	16	1.12	0.96	3.37	2.16	6.62	2.47	2.25	3.04
3	10	1.40	0.97	4.20	6.10	6.75	3.30	2.10	2.47
4	5	1.00	0.71	4.80	2.59	5.80	3.27	1.20	0.84
5	4	0.75	1.50	4.00	2.16	5.75	2.75	1.75	2.36

Table 5 summarizes the means and standard deviations for the two experimenter-administered anxiety measures during the dental examination. While there are differences between the mean Picture Test scores obtained by $\underline{E}_2$ and the other two $\underline{E}$'s, this can be accounted for by the lower pretreatment anxiety scores obtained by the nine children tested by $\underline{E}_3$ and $\underline{E}_4$.

Another aspect of the experimenter effects is the effect of familiarity of experimenters with subjects. Because individuals who assisted in the pretesting of children also acted as experimenters during the experimental procedures, an examination of these effects was undertaken. Table 6 presents a summary of this analysis. There were 11 children who had been pretested by $\underline{E}_2$ and who participated in the experiment while $\underline{E}_2$ acted as dental assistant. The remaining 33 children were unfamiliar with the individual who acted as dental assistant. A comparison of the familiar and unfamiliar children's anxiety scores during the dental examination reveals no significant differences. However, there was a trend suggesting that, on the Picture Test, familiarity was a factor in producing smaller gain scores for children who were familiar with the $\underline{E}$-dental assistant. Table 6 also presents the means and standard deviations of pretreatment anxiety (Picture Test) by subject familiarity with $\underline{E}_1$. Again there are no significant differences.

Table 5

Latency and Anxiety Picture Test (Posttreatment) by Experimenter

Experimenter	Number Tested	Latency		Anxiety	
		$\overline{X}$	SD	$\overline{X}$	SD
2	35	19.46	10.42	2.23	2.91
3	6	17.17	5.08	0.00	0.00
4	3	20.33	14.43	0.58	0.33

Table 6

Anxiety by Subject Familiarity with Experimenters

		Anxiety by Subject Familiarity with Dental Assistant							
Group	N	Anxiety Rating		Cooperative Rating		Latency		Picture Test (Gain)	
		$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
Familiar	11	24.27	9.24	22.09	13.43	21.45	17.01	47.15	3.60
Unfamiliar	33	27.27	15.64	21.72	13.64	18.45	6.37	50.39	5.33
t tests		$t < 1.00$ N.S.		$t < 1.00$ N.S.		$t < 1.00$ N.S.		$t = 1.84$ N.S.	

Anxiety by Subject Familiarity with *E*$_1$ Picture Test (t_2)

Group	N	Picture Test (t_2) $\overline{X}$	SD
Familiar	9	2.55	3.20
Unfamiliar	35	1.40	2.03
t test		$t = 1.29$ N.S.	

Primary Analyses

The primary analyses of data consist of testing the major experimental hypotheses. These will be followed by a description of additional analyses performed that were unplanned prior to the primary analyses. Table 7 presents a summary of the measures utilized along with the point in time at which they were obtained.

All analyses of variance and most t tests and correlational analyses (Pearson r) were performed on the IBM 370 computer of the Northeast Regional Data Center at Gainesville, Florida. Standard scores were computed with the aid of an IBM 1800 computer at the University of Florida and additional simple analyses were performed by the author with the aid of an electronic calculator.

Raw scores were utilized for all analyses of dependent measures with the exception of the Picture Test for which gain scores were calculated to compare changes over time.

Significance levels were set at .05 although less significant results will (at times) be reported.

Testing Hypotheses 1 and 2

The first two hypotheses deal with the prediction of the effects of fantasy predisposition and play on anxiety. The first hypothesis predicts that the relationship between fantasy, play, and anxiety measured

Table 7

Measures and Time Assessed

Time	Description	Measures Collected	Subjects
t_1	Pretesting prior to experiment	Toy preference Picture Test - 1 Fantasy predisposition	All children N = 44
t_2	Pretreatment at beginning of experiment prior to play treatment	Toy preference Picture Test - 2	All children N = 44
t_3	During treatment	Time spent in types of toy play Time spent in 3 categories of play Parent Dental Anxiety Scale (DAS)	Play condition N=22 Parents N = 43
t_4	Posttreatment following play treatment in the Dental Clinic	Picture Test - 3 Latency Anxiety Rating Cooperativeness Rating	All children N = 44

posttreatment will take the form of a main effect for play and/or an interaction between play and fantasy such that only the high fantasy children will benefit from play. Table 8 contains the means and standard deviations for each group on the four anxiety postmeasures. Hypothesis 2 makes the same predictions for anxiety measured pre- and posttreatment, that is, the gain scores from t_2 to t_4. These means are presented in Table 8 as well.

The testing of the alternatives for Hypothesis 1 was accomplished using a 2x2 factorial multivariate analysis of variance (MANOVA) with four dependent anxiety measures and univariate analyses of variance for each separate anxiety measure.

Appendix C presents the results of the multivariate ANOVA. There is no support for the main effect of Play nor is there any support for a Play effect in the univariate analyses also in Appendix C. Therefore, this part of the first hypothesis must be rejected. The MANOVA is also not significant for the Fantasy x Play interaction. The univariate analyses of the individual measures also yield no results that reach acceptable levels of significance although the Anxiety Rating measure comes close enough to warrant some attention ($F=2$, $p < .151$). An examination of the group means confirms that the trend represented in the data is in the expected direction,

Table 8

Means and Standard Deviations of Posttreatment Anxiety Measures by Group

Group (All N's = 11)	Picture Test		Latency		Anxiety Rating		Cooperativeness Rating	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
High Fantasy - Play	1.0	1.7	16.5	3.7	20.7	10.1	16.6	6.6
High Fantasy - Nonplay	0.8	0.6	16.5	3.9	31.2	7.1	22.6	11.5
Low Fantasy - Play	3.2	3.7	20.6	8.2	28.4	23.2	25.0	19.5
Low Fantasy - Nonplay	2.7	3.0	23.1	17.2	26.2	11.2	23.0	13.2

Mean Anxiety Gain Scores by Group (in Standard Scores) (t_2 to t_4)

	High Fantasy-Play	High Fantasy-Nonplay	Low Fantasy-Play	Low Fantasy-Nonplay
Mean	49.98	49.25	51.53	48.52

that is, high fantasy children in the play condition are less anxious than high fantasy nonplay children. However, this part of the hypothesis must also be rejected, but because of the exploratory nature of this study, this result will not be totally disregarded.

The analysis of Hypothesis 2 was performed using a two-way analysis of variance with the gain scores for the Picture Test. These results are presented in Appendix C and are not significant for either the main effect of Play or the Fantasy x Play interaction.

The only finding of statistical significance in these analyses is for the main effect of Fantasy. The MANOVA results in Appendix C indicate an overall effect for Fantasy ($F=3.678$, $p < .013$). Also, the univariate F for the Picture Test is highly significant ($F=9.165$, $p < .004$) and the univariate F for the Latency measure approaches significance ($F=3.172$, $p < .082$).

Testing Hypotheses 3 and 4

Hypotheses 3 and 4 predict that there will be differences in the amount of anxiety-relevant play engaged in by high and low anxious children, and that high fantasy children will engage in more of this type of play as well as more fantasy play than low fantasy children.

To examine the relationships between anxiety-relevant play (i.e., play with dental toys, play with dental-related toys, and dental-relevant thematic play), children were divided into high and low anxious groups on the basis of their gain scores on the Picture Test. Comparisons between the two groups were then made using t-tests for independent groups for dental and nondental toy play and dental-relevant thematic play. Appendix D presents the results of the analysis. There are no differences between the groups.

Additionally, correlation coefficients were computed for the toy and play variables with gain scores, overall anxiety posttreatment and Picture Test pretreatment to determine if anxiety at any point in time or change in anxiety was related to anxiety-relevant play. Appendix D contains these correlations. None of these relations are significant.

Hypothesis 4 states that high fantasy children will engage in more anxiety-relevant play and more fantasy play than low fantasy children. Appendix D presents the results of the comparisons between these groups. Although the differences between the high and low fantasy groups on anxiety-relevant play are not significant, there is a significant difference in the amount of fantasy play engaged in by these groups as expected ($t=2.13$, $p < .03$).

Thus, Hypotheses 3 and 4 must be rejected except for the prediction of differences in fantasy play among high and low fantasy groups.

Testing Hypotheses 5 and 6

Hypotheses 5 and 6 are concerned with the effects of the child's becoming aware of an impending anxiety-arousing event.

Hypothesis 5 states that there will be an increase in level of anxiety on the Picture Test from the pre-experiment testing (t_1) to the pretreatment testing during the experiment (t_2). The means for the Picture Test at t_1 and t_2 are presented in Appendix E. Rather than the expected increase in anxiety, there was a decrease which was found to be not significant using a *t*-test for non-independent samples.

Hypothesis 6 predicts that there will be changes in toy preferences between t_1 and t_2. Paired *t*-tests were calculated to compare the number of dental toy choices made by each child at each time. The results are presented in Appendix E. The means at each time are not significantly different ($\overline{X}t_1$=2.82, $\overline{X}t_2$=2.98). Thus, hypotheses 5 and 6 also must be rejected.

Testing Hypothesis 7

Of the 12 correlations between children's anxiety and mother and father's anxiety scores on the Dental Anxiety Scale, only one reaches statistical significance and that is in the opposite direction from what was expected (see Appendix F). Thus, this hypothesis must be rejected.

Testing Hypothesis 8

This hypothesis predicted that there would be no difference in anxiety on the Picture Test between the high and low fantasy groups. Table 9 presents the results of comparing the high and low fantasy group means on this measure. Contrary to expectation the high fantasy group had significantly lower scores on this measure at two of three points in time. Thus, Hypothesis 8 must be rejected.

Effects of Sex

Although the number of subjects available precluded the possibility of exploring sex differences in depth, the analyses applied to the data in Hypothesis 1 were performed using sex as a third factor. The results of this 2x2x2 MANOVA are summarized in Appendix F. As none of these results approached significance, sex was not considered in the remaining analyses, though it is realized that only the most pronounced effects could have been detected with such a limited sample.

Additional Analyses

In addition to the primary analyses, certain other analyses were performed to further explore the data.

Table 9

Comparison of High and Low Fantasy Groups on Picture Test (t_1, t_2, and t_4)

Group	Picture Test					
	time 1		time 2		time 3	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
High Fantasy	1.4	2.1	0.5	0.9	0.6	1.3
Low Fantasy	2.5	2.5	2.7	2.8	2.9	3.3

_t_ tests	t	df		t	df	Sig.	t	df	Sig.
	-1.6	42	N.S.	-3.5	42	.001	-3.08	42	.004

Inspection of the information relative to group composition revealed that the high fantasy children were approximately 5-6 months older than the low fantasy children. Correlations between age and various experimental variables are presented in Table 10. It is evident that there are moderate relationships between age, fantasy, and anxiety measures, although none of these accounts for much of the variance.

Because of these relations, it was decided to reanalyze the data relative to Hypothesis 1 with age as a covariate. Appendix C summarizes the results of this analysis. The effect of covarying age was to decrease the significance of the multi-variate F for the Fantasy effect from $p < .013$ to $p < .076$ and the univariate F's from $p < .004$ to $p < .028$ for the Picture Test and $p < .082$ to $p < .313$ for the Latency measure.

In addition, the data relevant to Hypotheses 1 and 2 were reanalyzed using only children in the upper and lower thirds of the fantasy distribution to examine the possibility that results of some significance were being obscured by the delineation of high and low fantasy on the basis of a median split (a procedure necessitated by the lack of a sufficiently large population of children to do otherwise).

The results of this analysis are presented in Appendix C along with means and standard deviations of

Table 10

Correlations Between Age and Fantasy and Anxiety Measures

	Age
Interview	.2991*
Transcendence Index	.3609**
Holtzman M	.2990*
Picture Test - 1	-.1734
Picture Test - 2	-.4212**
Picture Test - 3	-.3476**
Anxiety Rating	-.2745*
Latency	-.3386*
Cooperative Rating	-.3775**

*Sig. $p < .05$

**Sig. $p < .01$

anxiety measures by group. None of the results approaches significance. In comparing these results with those obtained using the median split, it is apparent that the pattern of results remains essentially unchanged.

As mentioned previously, Hypothesis 3 predicted that children who engaged in dental relevant play would show decreases in anxiety gain scores relative to those children who did not, and this hypothesis was rejected. To further examine the effects of anxiety on play, children were also divided into high and low anxiety groups on the basis of Picture Test scores pretreatment (t_2) and anxiety standard scores posttreatment (t_4). The purpose of this was to determine whether children who engaged in anxiety-relevant play were either more anxious going into the play session or more anxious following the play than children who engaged in less relevant play. The results of this analysis presented in Appendix D are again not significant for any of the toy or play variables.

Also, a further examination of the toy preference data from Hypothesis 6 was made for the purpose of discovering what might be happening in the 28% of the choices that changed from the first to the second administration of this measure. To determine whether these changes were related to anxiety, children were divided into high and low anxiety groups based on Picture Test scores (t_2). In order to obtain two relatively equal samples, the seven children who obtained scores of one were eliminated leaving 19 children with Picture Test scores of zero and 18 with scores above one. Inspection of the number of toy preference changes for high and low anxiety groups revealed no differences. However, some patterns emerged when fantasy level was also considered. Low anxious, high fantasy children changed mainly in the direction of preferring more dental toys while the opposite was true of high anxious, high fantasy children. A chi-square analysis of these frequencies is significant using Yates' correction for continuity (Downie & Heath, 1965). For low fantasy children the opposite effects were found, although they were not statistically significant. That is, the low fantasy, high anxious children changed more toward dental toys where the less anxious, low fantasy children's preferences, when they changed, were in the direction of nondental toys. Although interesting, these results take into account only the changes which account for only 28% of the total choices. Certainly one must take note of the fact that 72% of all choices remained the same from the first to the second testing.

Summary of Play Data

In order to place the play data in perspective, a breakdown by percentages of the types of play engaged in by children will be presented. More than 80% of all play fell into the manipulative/exploratory category with fantasy play accounting for about 13% and creative/constructive play less than 7%. Only one child engaged in what was labeled nonplay activity (she stood in the center of the room and did nothing for 40% of the play session).

With respect to dental-related thematic play, overall this accounted for less than 5% of play activity or less than half of the fantasy play.

Somewhat similar trends are seen in the toy play data with overall 71% of the play being with nondental toys, 12% with dental toys and 17% with dental-relevant toys.

These results suggest that relatively little of the child's time was occupied in anxiety-relevant play and even less in anxiety-relevant fantasy play.

CHAPTER IV

DISCUSSION

Summary of Results

Overall, no support was found for the various experimental hypotheses that children would use play to reduce anxiety.

The only variable found to have a significant effect on children's anxiety during the dental examination was fantasy predisposition. It was found that high fantasy children were significantly less anxious than low fantasy children as measured by the Picture Test, a self-report measure. The Latency measure approached significance for the fantasy predisposition effect. Only the Anxiety Rating measure reflected any differences due to play with the high fantasy children who played being rated as less anxious than high fantasy children who did not play although this result did not reach statistical significance.

Additionally, the results did not support the hypothesis that children would engage in fantasy play, particularly anxiety-related fantasy play to reduce anxiety.

While it was found that high fantasy children did engage in significantly more fantasy play than low fantasy children (19% to 4%), overall fantasy play represented a relatively small amount of the children's total play activity (13%). Anxiety-related fantasy play occupied the children for only 5% of the overall play time with only nine of 22 children spending any time in this type of play. Although high fantasy children engaged in more anxiety-related fantasy play, as would be expected, the difference was not significant (7-1/2% to 2%).

The prediction that children who engaged in more anxiety-related fantasy play would be less anxious during the dental examination was not supported as no significant differences were found between high and low anxious children with respect to time spent in anxiety-related fantasy play. Additionally, correlations between anxiety scores and amount of this type of play were not significant. The trend, however, was in the expected direction with low anxious children engaging in more anxiety-related fantasy play (7%-3%).

Thus, the major hypotheses of this study had to be rejected. Additionally, the prediction that anxiety would affect children's preferences for anxiety-related toys had to be rejected.

In order to examine the implications of these findings for a theory of play, there are certain issues that must be explored. The first two concern the validity of anxiety and fantasy measurement and the nature of the experimental situation for the child.

Validity of Anxiety and Fantasy Measurement

There are data from Venham's (1973) use of the Picture Test indicating significant decreases in children's anxiety scores from testing before to after a dental examination. Although he found insignificant correlations between his 8-item version of the test and ratings of anxiety and cooperative behavior as well as physiological responses, he concludes that this ". . . was not unexpected since high intercorrelations among various categories of anxiety measurement have not been reported by other investigators" (Venham, 1973, p. 5).

It is of note that in the present study correlations between the Picture Test and ratings of anxiety and cooperativeness were significant and although the Picture Test was not significantly related to the Latency measure, the Latency measure was related significantly to the ratings. The results of Venham's (1973) research with the Picture Test along with the significant relationships found in the present study among the anxiety measures, provide support for considering these as valid measures of anxiety. The size of the correlations obtained is particularly impressive as these measures were obtained at different points in time during the examination process.

In addition to results obtained in other studies using measures of fantasy predisposition similar to the ones used here, this study also provides a source of validation for the measures. It was found that children in the high fantasy predisposition group engaged in significantly more fantasy play than did the low fantasy group. It may have been possible to obtain even greater differences between the groups if enough children could have been tested to allow the utilization of only the upper and lower thirds of the distribution rather than having to rely on a median split for the delineation of high and low groups.

Results with the Picture Test

The fact that the Picture Test did not reflect increases in anxiety from pre-experiment testing through the dental examination as expected deserves attention, especially as this measure was the only one for which significant differences were found among the experimental groups.

It would appear that although the measure may reflect changes in anxiety over time (before and after a dental examination) according to the research of Venham (1973), it does not appear to be sensitive enough to discriminate the smaller changes in anxiety obtained within the experimental situation at different points in time prior to the examination. The fact that there were no significant increases from the pretesting (before the child was aware of the dental examination) to just prior to the examination is more difficult to account for. It is possible that children were made as anxious by the pretesting as they were by the dental examination, but this does not appear likely, at least on the surface. However, as will be discussed further, there is some reason to believe that children were not made very anxious by the experimental situation and there is also reason to believe that some of the children were not providing accurate reports on the measure.

An examination of experimental results indicates that the high fantasy children consistently responded differently to the Picture Test than did the low fantasy children. During the experiment the high fantasy children were consistently less anxious according to Picture Test scores. Also, the Picture Test was the only measure for which significant differences were obtained between experimental groups at the time of the dental examination, with the high fantasy children, regardless of play condition, obtaining lower anxiety scores on this self-report measure.

However, there is a discrepancy between these self-report data and the anxiety ratings made by the dentist which has interesting implications. An examination of the data indicates that while the high fantasy nonplay children reported themselves as the least anxious, they were actually seen as the most anxious group by the dentist. Although the results obtained with the Latency measure are similar to those of the Picture Test (with the high fantasy children being the least anxious), these results drop well below significance when the fact that high fantasy children are older is taken into account, that is, when age is covaried. However, the significance of the Picture Test results remains when age is covaried ruling out the likelihood that the differences obtained with this measure are due to age.

What is suggested by these findings is that rather than the Picture Test reflecting only differences between the high and low fantasy children in anxiety, it may also be reflecting differences in some of these children's ability or willingness to report their feelings. This is contradictory to Singer's (1966) conclusion with adults that high fantasy individuals are more likely to report feeling anxious as they are more aware of and sensitive to such feelings in themselves. If one assumes that high fantasy individuals are more tuned in to their own inner experiences, which is essential to the concept of high fantasy predisposition, then these results suggest that, at least with young children, there is some unwillingness to admit these experiences to other people.

A statement by Sarason (1966) made in the context of a discussion of children who obtain high lie scores on self-report anxiety measures may have relevance for these findings. He asks,

> Is the child who tends not to admit to what are considered universal anxiety experiences consciously keeping them private and, if so, is this related to a more general tendency to keep disturbing experiences from manifesting themselves? Is this tendency . . . _related to the use and content of fantasy_, styles of relating to other people and affect expression? (Sarason, 1966, p. 76)(Emphasis mine)

Certainly, the differences between high and low fantasy children in the reporting of anxiety deserves further attention particularly as it might relate to the child's manner of coping with stress.

The Experimental Situation

This experiment was designed around a dental examination with the expectation that a first dental examination would be an anxiety-arousing event for most children. To the extent that the anxiety measures have some validity, it is apparent that the majority of children who participated in this study were not made very anxious by the experimental situation. The scores of the anxiety measures tended to be concentrated around the positive end of the distribution and this was especially true of the

Picture Test with 23 of 44 scores equaling zero and another six scores of one. This suggests a floor effect and is indicative of the insensitivity of the measure. As mentioned, there is some reason to believe that this measure was not accurately reflecting anxiety in all of the children, but even among the low fantasy children, average scores fell well below the results obtained by Venham (1973) with a 17-item version of the test. He found that between 45 and 65% of children's responses before a dental examination were reflective of anxiety (i.e., children selected the more negatively aroused member of the pair). In the present study, although the number of items and method of administration differed somewhat from Venham's, overall children made responses indicative of anxiety only 20% of the time. The highest scoring group on this measure, the low fantasy play condition children, averaged only 3.2 anxiety responses out of the 10 items. Therefore, unless the subjects in the present study were all responding in ways to deny anxiety, the conclusion must be drawn that these children were, on the average, less anxious than the children studied by Venham (1973) and were not made particularly anxious by the experimental situation.

There are certain differences between this sample and the ones employed by Venham (1973) which offer possible explanations for these results. The major difference is that Venham was dealing with children who had generally had experience with dental procedures where the children in this study were purposely selected to be inexperienced. Thus, the children in Venham's studies had often had dental experiences involving some pain while the children here had never been personally hurt by a dentist. Also, because the parents were informed that no dental work would be done during the examination, children probably were made aware of this and were not expecting anything painful to happen. Thus, for these children, there was probably little to fear in the experimental situation.

Overall, then, children who participated in this research were probably only made mildly anxious by the procedures, less so than might have been expected under different conditions. The result of this limited range of anxiety may have been to obscure the predicted differences between experimental groups with respect to both play and fantasy.

Also, as mentioned previously, children engaged in relatively little fantasy play and even less fantasy play with a dental-related theme. Had there been more of this type of play, the trends in the data may have emerged as significant.

What can be concluded from these results is that children under these experimental conditions chose not to engage in much anxiety-related fantasy play. Under conditions similar to these, Rutherford and LaVoie (1973) found that children engaged in fantasy play 18% of the time just prior to a medical examination while here the overall percentage was 13 for fantasy play. They found that one to two weeks prior to the examination, children engaged in about 28% fantasy play. This decrease in fantasy play at the time of the examination was accompanied also by a decrease in manipulative play and an increase from 13% to 30% for creative/constructive play.

The present study, while somewhat comparable in terms of the amount of fantasy play found, differs considerably in the amount of time children were found to spend in creative/constructive play. Thus, children in the present study chose to spend relatively similar amounts of time in fantasy play to the children studied by Rutherford and LaVoie (1973) but not nearly as much time in creative/constructive play (6% to 30%).

The differences obtained here relative to those of Rutherford and LaVoie (1973) may be due in part to a procedural difference. While Rutherford and LaVoie (1973) limited the toys available to the children to four at a time, here the children had access to 17 toys, and thus, might be expected to engage in somewhat more manipulative play as they had more toys to look through in deciding what to play with. This would have reduced the amount of time available for other play activities. Although there was wide variability in the number of toys actually played with, 15 of 22 children played with more than four toys during the play session.

Thus, there may have been situational factors in addition to the anxiety-induction procedure which affected the type of children's play activity, including the number of toys available, as well as such factors as a parent in the room. It may be also, that the timing of the play session may have had a pronounced effect on the child's activity. One might see more anxiety-relevant play under conditions somewhat more removed from the actual dental examination, for example, at home the night before the examination, or maybe after the examination was completed. All of these possibilities are subject to empirical investigation. Piagetan and psychoanalytic theories were the source of experimental hypotheses, and the fact that under these experimental conditions little support was obtained for them provides information about their application to only a very specific set of circumstances and much more research is needed before the whole process of the assimilation of anxiety-arousing experiences is understood.

Although this study does not directly address the issue of whether children would utilize a fantasy opportunity, that is, free play, to alter their negative mood through fantasy, as suggested by Singer (1973), the fact that children engaged in relatively small amounts of fantasy (only one child spent more than half of the play time engaged in fantasy activity) leads one to wonder how much fantasy play might be expected if this process were occurring. The fact that the difference between the high fantasy play and nonplay groups on the Anxiety Rating scale was in the direction expected, if fantasy play was contributing to a reduction in anxiety, certainly does not rule out the possibility that high fantasy children were using fantasy in this way, although this result is not significant.

Additional Results

Before concluding, mention will be made of some of the results of this research which are not central to the major issues. As mentioned, there was no support for the prediction that anxiety would affect children's preferences for toys relevant to the source of their anxiety. Although children's choices on the toy preference measure from pre-experiment testing to testing at the beginning of the experiment resulted in no overall differences in the numbers of toys selected by type (i.e., dental or nondental), and 72% of the choices remained the same from first to second administration of the measure, there were interesting differences within the 28% that did change. These were evident only when both anxiety and fantasy level were taken into consideration. It was found that high fantasy-high anxious children tended to avoid dental toys on the second administration while high fantasy-low anxious children selected more dental toys. The opposite was true of the low fantasy children. While these results were obtained using a small part of the toy preference data, they do suggest that fantasy and anxiety may interact in ways that are as yet, largely unexplored.

The finding of no significant relationship between parental anxiety and child's anxiety had not been tested previously with the measures employed in this study and is of interest in relation to the methods of measurement as well as in relation to the evidence suggesting that such a relationship does exist at least between maternal anxiety and children's response to the dental situation.

The finding of no sex differences in the data is not surprising in light of the lack of such differences in other studies dealing with fantasy and play. However, a thorough examination of such effects could not be undertaken because of the limited size of the sample.

Conclusions

Under the experimental conditions of this study, children chose to engage in relatively little fantasy play and even less anxiety-related fantasy play. Thus, children, overall, did not choose this type of play to attempt to assimilate an anxiety-arousing experience. Certain situational variables which might have acted to limit this type of play were discussed but the factor that may have been the most influential in the general lack of significant results was the limited range of anxiety scores obtained by children. Additionally, the relatively small amount of fantasy play could also have obscured results that were significant. Certainly these two factors suggest that this experimental situation was not as adequate as others might have been to test the hypotheses in question.

Another methodological factor which may have affected these results was the division of children into high and low fantasy groups on the basis of a median split of anxiety scores rather than using only the upper and lower third of a fantasy distribution. This, too, could have been a factor in the lack of differences found between high and low fantasy children.

The finding of no significant differences between the play and nonplay conditions with respect to anxiety suggests, within the limitations of the study, that although children did not spontaneously choose to engage in creative/constructive play, as they did in the Rutherford and LaVoie (1973) study, children who were restricted to this type of activity were no more anxious than the children who played freely. It may be that children are able to utilize different types of activities to cope with their anxiety.

In summary, although the results of this study must be expressed largely in terms of the rejection of various experimental hypotheses, two positive statements regarding the findings can be made.

First, under conditions of mild anxiety arousal prior to the anxiety-arousing event, children chose to spend most of their play time engaged in manipulative activity rather than fantasy or creative/constructive play, and second, high fantasy children consistently reported themselves as less anxious than low fantasy children on a self-report measure of anxiety.

Although the present study has failed to answer any of the experimental questions definitely, it does point out some of the methodological problems in working in this complex area of research. It also offers additional support for Singer's (1973) position that fantasy predisposition is an important personality variable in the understanding of children and their development.

Finally, it is hoped that some of the ideas and suggestions derived from this research will be useful to future researchers in this fascinating and relatively unexplored area of psychology.

Suggestions for Future Research

Although the results of this study do not provide significant support for the hypotheses derived from play theory, the alteration of certain of the procedures offers the potential for obtaining expected results. However, as mentioned, this type of situation is only one out of many situations in which assimilation through play may occur. Further research is needed to be able to identify the conditions under which it naturally occurs with possible implications for facilitating assimilation. Certainly, too, the variable of fantasy predisposition may have implications for this process as certain children may need or use methods other than fantasy to deal with anxiety.

Also, the results obtained with the Picture Test self-report measure suggest that predisposition to fantasy may have opposite effects on one's willingness to admit to certain inner experiences depending on one's developmental status and deserves more attention, especially as it might relate to children's coping strategies.

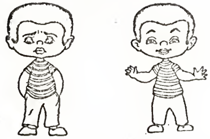
These are only a few of the many interesting issues that remain to be explored.

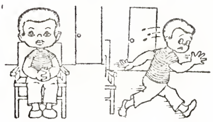
APPENDICES

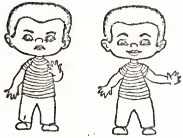
APPENDIX A

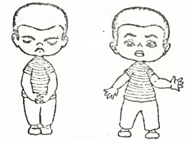
ANXIETY MEASURES

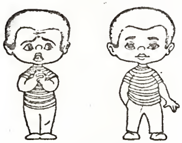
Picture Test

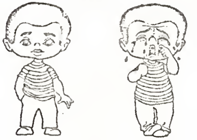


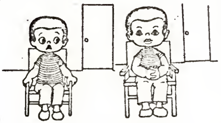


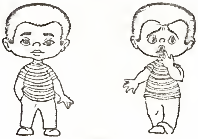


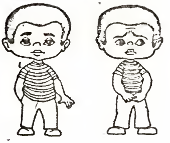


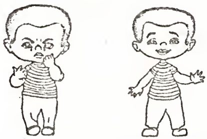












Rating Scales for Anxiety and Cooperativeness

Most cooperative child I can imagine	________________________________	Least cooperative child I can imagine
Most anxious child I can imagine	________________________________	Least anxious child I can imagine

Corah's (1969) Dental Anxiety Scale

1. If you had to go to the dentist tomorrow, how would you feel about it?
   - a) I would look forward to it as a reasonable enjoyable experience.
   - b) I wouldn't care one way or the other.
   - c) I would be a little uneasy about it.
   - d) I would be afraid that it would be unpleasant and painful.
   - e) I would be very frightened of what the dentist might do.
2. When you are waiting in the dentist's office for your turn in the chair, how do you feel?
   - a) Relaxed
   - b) A little uneasy
   - c) Tense
   - d) Anxious
   - e) So anxious that I sometimes break out in a sweat or almost feel physically sick.
3. When you are in the dentist's chair waiting while he gets his drill ready to begin working on your teeth, how do you feel?
   - a) Relaxed
   - b) A little uneasy
   - c) Tense
   - d) Anxious
   - e) So anxious that I sometimes break out in a sweat or almost feel physically sick.
4. You are in the dentist's chair to have your teeth cleaned. While you are waiting and the dentist is getting out the instruments which he will use to scrape your teeth around the gums, how do you feel?
   - a) Relaxed
   - b) A little uneasy
   - c) Tense
   - d) Anxious
   - e) So anxious that I sometimes break out in a sweat or almost feel physically sick.

APPENDIX B

THE TOYS

Table B-1
The Toys

Toy Preference Measure

Pair No.	Dental (D) or Dental Related (DR)	Nondental
1	Toothbrush (D)	Plastic bat (male) Jump rope (female)
2	Silver manicure tools (DR)	Plastic tools (hammer etc.)
3	Chattering teeth (D)	Mask
4	Alligator gun (DR)	Porpoise gun
5	Doctor toys (DR)	Policeman toys (male) Cosmetics (female)
6	Doll in white coat (DR)	Doll in regular costume
7	Syringe (DR)	Paddle with ball

Toys Added for Play Sessions

1	Tinker toys
2	Large rubber ball
3	Play dough

APPENDIX C

ANALYSES OF VARIANCE AND RELEVANT DATA

Table C-1
Fantasy and Play with Four Posttreatment Anxiety Measures

Multivariate Analysis

Source	df	F	Sig.
Fantasy	4	3.68	.013
Play	4	<1.00	.677
FXP	4	<1.00	.488
Error	37	——	——

Univariate Analyses

A. Picture Test

Source	df	MS	F	Sig.
Fantasy	1	59.11	9.16	.004
Play	1	3.84	<1.00	.445
FXP	1	.20	<1.00	.860
Error	40	——	——	——

B. Latency

Source	df	MS	F	Sig.
Fantasy	1	311.11	3.17	.082
Play	1	16.57	<1.00	.683
FXP	1	16.57	<1.00	.683
Error	40	——	——	——

Table C-1 continued

C. Anxiety Rating

Source	df	MS	F	Sig.
Fantasy	1	19.11	<1.00	.761
Play	1	188.21	<1.00	.343
FXP	1	439.11	2.15	.151
Error	40	——	——	——

D. Cooperativeness Rating

Source	df	MS	F	Sig.
Fantasy	1	209.46	1.14	.291
Play	1	44.00	<1.00	.627
FXP	1	176.00	<1.00	.333
Error	40	——	——	——

Table C-2

Fantasy and Play with Anxiety Gain Scores (t_2 to t_4)

Source	df	MS	F	Sig.
Fantasy	1	1.82	<1.00	N.S.
Play	1	38.48	1.38	N.S.
FxP	1	14.28	<1.00	N.S.
Error	40	——	——	——

Table C-3

Fantasy and Play with Anxiety Gain Scores (t_2 to t_4)
with Upper and Lower Thirds of Fantasy

Source	df	MS	F	Sig.
Fantasy	1	10.97	<1.00	N.S.
Play	1	97.87	3.37	N.S.
FxP	1	18.26	<1.00	N.S.
Error	24	——	——	——

Table C-4

Fantasy, Play and Sex with Four Posttreatment Anxiety Measures

Multivariate Analysis (2x2x2)

Source	df	F	Sig.
Fantasy	4	3.56	.016
Play	4	<1.00	.694
Sex	4	<1.00	.862
FxP	4	<1.00	.492
FxS	4	<1.00	.486
PxS	4	<1.00	.907
FxPxS	4	<1.00	.617
Error	37	——	——

Table C-5

Fantasy and Play with Four Posttreatment Anxiety Measures with Age Covaried

---

Multivariate Analysis

Source	df	F	Sig.
Fantasy	4	2.31	.076
Play	4	<1.00	.691
FxP	4	<1.00	.464
Error	37	——	——

Univariate Analyses

A. Picture Test

Source	df	MS	F	Sig.
Fantasy	1	32.64	5.194	.028
Play	1	4.12	<1.00	.423
FxP	1	.27	<1.00	.836
Error	40	——	——	——

B. Latency

Source	df	MS	F	Sig.
Fantasy	1	97.66	1.04	.313
Play	1	13.98	<1.00	.701
FxP	1	19.35	<1.00	.652
Error				

Table C-5 continued

C. Anxiety Rating

Source	df	MS	F	Sig.
Fantasy	1	33.16	1.04	.681
Play	1	174.53	<1.00	.348
FxP	1	418.02	<1.00	.149
Error	40	—	—	—

D. Cooperativeness Rating

Source	df	MS	F	Sig.
Fantasy	1	3.83	<1.00	.880
Play	1	36.52	<1.00	.641
FxP	1	160.68	<1.00	.331
Error	40	—	—	—

Table C-6

Fantasy and Play with Four Posttreatment Anxiety Measures with Upper and Lower Thirds of Fantasy

---

Multivariate Analysis

Source	df	F	Sig.
Fantasy	4	2.06	.123
Play	4	<1.00	.635
FxP	4	<1.00	.626
Error	21	——	——

Univariate Analyses

A. Picture Test

Source	df	MS	F	Sig.
Fantasy	1	41.29	5.28	.031
Play	1	11.57	1.48	.236
FxP	1	1.29	<1.00	.689
Error	24	——	——	——

B. Latency

Source	df	MS	F	Sig.
Fantasy	1	440.03	3.04	.094
Play	1	10.32	<1.00	.792
FxP	1	54.32	<1.00	.546
Error	24	——	——	——

Table C-6 continued

C. Anxiety Rating

Source	df	MS	F	Sig.
Fantasy	1	357.14	1.30	.265
Play	1	46.29	<1.00	.685
FxP	1	371.57	1.35	.256
Error	24	——	——	——

D. Cooperativeness Rating

Source	df	MS	F	Sig.
Fantasy	1	240.14	<1.00	.331
Play	1	1.29	<1.00	.943
FxP	1	329.14	1.35	.257
Error	24	——	——	——

Table C-7

Means and Standard Deviations of Posttreatment Anxiety Measures by Group (Utilizing Upper and Lower Thirds of Fantasy)

Group(All N=7)	Picture Test		Latency		Anxiety Rating		Cooperative Rating	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
High Fantasy Play	1.14	1.86	16.57	3.36	19.43	12.09	14.86	7.67
High Fantasy Nonplay	0.29	0.76	15.00	2.89	29.29	6.80	21.29	11.03
Low Fantasy Play	4.00	3.79	21.71	9.91	33.86	27.95	27.57	24.04
Low Fantasy Nonplay	2.29	3.59	25.71	21.46	29.14	11.13	20.29	14.75

Mean Anxiety Gain Scores (t_2 to t_4) by Group (Upper and Lower Fantasy Thirds

	High Fantasy Play	High Fantasy Nonplay	Low Fantasy Play	Low Fantasy Nonplay
Mean	50.87	48.75	53.74	48.39

APPENDIX D

ANALYSES WITH TOY AND PLAY VARIABLES

Table D-1

Comparison of High and Low Anxiety Groups (by Gain Scores) on Play and Toy Variables

Group	N	Toy Play						Dental-Related Thematic Play		
		Dental			Nondental					
		$\overline{X}$	SD		$\overline{X}$	SD		$\overline{X}$	SD	
Low Anxious	12	11.0	15.7		72.7	22.6		2.2	3.5	
High Anxious	10	13.3	22.1		69.7	26.4		1.3	2.5	
t tests		*t*	df		*t*	df		*t*	df	
		-0.28	20	N.S.	-0.29	20	N.S.	.65	20	N.S.

Table D-2

Comparison of High and Low Fantasy Groups on Toy and Play Variables

Group	N	Toy Play						Dental-Related Thematic Play			Fantasy Play		
		Dental			Nondental								
		$\overline{X}$	SD		$\overline{X}$	SD		$\overline{X}$	SD		$\overline{X}$	SD	
High Fantasy	11	9.4	20.0		72.6	24.9		2.7	3.8		6.9	8.1	
Low Fantasy	11	14.5	17.3		70.0	23.8		0.8	1.6		1.5	2.0	
t tests		*t*	*df*		*t*	*df*		*t*	*df*		*t*	*df*	*Sig.*
		-0.65	20	N.S.	0.25	20	N.S.	1.54	20	N.S.	2.13	20	$p<.03$ (one-tail)

Table D-3

Comparison of High and Low Anxiety Groups (by Pretreatment Anxiety) on Play and Toy Variables

Group	N	Toy Play Dental			Toy Play Nondental			Dental-Related Thematic Play		
		$\overline{X}$	SD		$\overline{X}$	SD		$\overline{X}$		SD
Low Anxious	10	14.4	16.0		69.5	22.7		2.2		3.8
High Anxious	12	10.1	20.7		72.9	25.6		1.4		2.3
		t	*df*		*t*	*df*		*t*	*df*	
t tests		0.54	20	N.S.	-0.33	20	N.S.	0.59	20	N.S.

Table D-4

Comparison of High and Low Anxiety Groups
(by Posttreatment Anxiety Standard Scores) on Play and Toy Variables

Group	N	Toy Play						Dental-Related Thematic Play		
		Dental			Nondental					
		$\overline{X}$	SD		$\overline{X}$	SD		$\overline{X}$	SD	
Low Anxious	11	9.6	11.4		74.4	21.5		2.4	3.8	
High Anxious	11	14.4	23.9		68.4	26.7		1.2	2.0	
t tests		*t*	*df*		*t*	*df*		*t*	*df*	
		-0.60	20	N.S.	0.58	20	N.S.	0.90	20	N.S.

Table D-5

Correlations of Toy and Play Variables with Anxiety Measures

Anxiety Measure	Dental Toy Play	Nondental Toy Play	Dental Related Thematic Play
Treatment (Standard Score)	-.1573	.2003	-.2164
Gain Score	-.1430	.2184	-.2150
Picture Test-2	-.2535	.1837	-.0211

APPENDIX E

COMPARISON OF PICTURE TEST AND TOY PREFERENCE SCORES PRE-EXPERIMENT TO PRETREATMENT (t_1 to t_2)

Table E-1

Comparison of Picture Test and Toy Preference Scores Pre-experiment to Pretreatment (t_1 to t_2)

Time	N	Picture Test		Toy Choice	
		$\bar{X}$	SD	$\bar{X}$	SD
1	44	1.93	2.34	2.82	0.22
2	44	1.64	2.32	2.98	0.19

	t	*df*		*t*	*df*	
t tests	1.01	43	N.S.	-0.7	43	N.S.

APPENDIX F

CORRELATIONS OF PARENT AND CHILD ANXIETY

Table F-1

Correlations of Parent and Child Anxiety

	Mother's DAS	Father's DAS
Picture Test-2	.0142	.0406
Picture Test-3	-.0334	.0696
Latency	.0292	-.1598
Anxiety Rating	-.1993	-.2543
Cooperative Rating	.1724	-.3039*

*Sig. $p < .05$

APPENDIX G

DESCRIPTION OF DENTAL PROCEDURES

The dental examination consisted of a standardized procedure in which the following tasks were performed in sequence:

1. Dentist enters, greets patient and turns on dental light.
2. Dentist asks child to open mouth and inspects teeth visually.
3. Dentist inspects teeth with mouth mirror.
4. Dentist blows air into child's mouth.
5. Dentist probes child's teeth with explorer, touching every tooth and making "scraping" sounds.
6. Dentist turns off dental light and calls in parent to discuss child's dental condition.

Note: 1. Dentist and dental assistant wear white jackets throughout.

2. Dental chair is not moved at any time.

BIBLIOGRAPHY

Adelson, R. & Goldfried, M. R. Modeling and the fearful child patient. Journal of Dentistry for Children, 1970, 37, 34-36, 46-47.

Amen, E. W. & Rennison, N. A study of the relationship between play patterns and anxiety in young children. Genetic Psychology Monographs, 1954, 20, 5-41.

Ames, L. B., Learned, J., Metraux, R., & Walker, R. Child research responses. New York: Hoeber-Harper, 1952.

Biblow, E. Imaginative play and the control of aggressive behavior. In J. L. Singer (Ed.), The child's world of make-believe: Experimental studies of imaginative play. New York: Academic Press, 1973.

Corah, N. L. Development of a dental anxiety scale. Journal of Dental Research, 1969, 48, 596.

Downie, N. M. & Heath, R. W. Basic statistical methods. New York: Harper & Row, 1965.

Eifermann, R. R. Social play in childhood. In R. Heron & B. Sutton-Smith, (Eds.), Child's play. New York: Wiley, 1971

Erikson, E. H. Childhood and society. New York: Norton, 1963.

Frankl, S. N., Shiere, F. R. & Fogels, H. R. Should the parent remain with the child in the dental operatory? Journal of Dentistry for Children, 1962, 29, 150-163.

Freud, S. Formulations on the two principles of mental functioning. In J. Strachey (Ed.), The complete pyschological works of Sigmund Freud. Vol. XII London: Hogarth, 1958.

Freud, S. Creative writers and daydreaming. In J. Strachey (Ed.), The standard edition of the complete psychological works of Sigmund Freud, Vol. IX. London: Hogarth, 1959.

Freyberg, J. Increasing the imaginative play of urban disadvantaged children through systematic training. In J. L. Singer (Ed.), The child's world of make-believe: Experimental studies of imaginative play. New York: Academic Press, 1973.

Gilmore, J. B. The role of anxiety and cognitive factors in children's play behavior. Child Development, 1966, 37, 397-416.

Gottlieb, S. Modeling effects upon fantasy. In J. L. Singer (Ed.), The child's world of make-believe: Experimental studies of imaginative play. New York: Academic Press, 1973.

Herskovitz, A., Liebert, R. M., & Adelson, R. A motion picture as a substitute for experience in a health delivery environment. Journal of the Biological Photographic Association, 1971, 39, 193-195.

Holtzman, W., Thorpe, J. S., Swartz, J. D., & Herron, W. Inkblot perception and personality. Austin, Texas: University of Texas Press, 1961.

Izard, C. E. & Tomkins, S. S. Affect and behavior: Anxiety as a negative affect. In C. Spielberger (Ed.), Anxiety and behavior. New York: Academic Press, 1966.

Johnson, R. & Baldwin, D. C. Relationship of maternal anxiety to the behavior of young children undergoing dental extraction. Journal of Dental Research, 1968, 47, 801-805.

Johnson, R. & Baldwin, D. C. Maternal anxiety and child behavior, Journal of Dentistry for Children, 1969, 36, 87-92.

Klinger, E. Development of imaginative behavior: Implications of play for a theory of fantasy, Psychological Bulletin, 1969, 72, 277-298.

Klinger, E. Structure and functions of fantasy. New York: Wiley, 1971.

Koenigsberg, S. R. & Johnson, R. Child behavior during sequential dental visits. Journal of the American Dental Association, 1972, 85, 128-132.

Lazarus, R. S. & Opton, E. M. The study of psychological stress: A summary of theoretical formulations and experimental findings. In C. Spielberger (Ed.), Anxiety and behavior. New York: Academic Press, 1966.

Millar, S. The psychology of play. Harmondsworth, England: Penguin, 1968.

Pellar, L. Models of children's play. Mental Hygiene, 1952, 36, 66-83.

Pellar, L. Libininal phases, ego development and play. In Psychoanalytic study of the child, Vol. 9. New York: International Universities Press, 1954.

Piaget, J. Play, dreams and imitation in childhood. New York: Norton, 1962.

Prola, M. A review of the transcedence index. Journal of Personality Assessment, 1972, 36, 8-12.

Pulaski, M. A. Toys and imaginative play. In J. L. Singer (Ed.), The child's world of make-believe: Experimental studies of imaginative play. New York: Academic Press, 1973.

Pytkowicz, A. R., Wagner, N. N., & Sarason, I. G. An experimental study of the reduction of hostility through fantasy. Journal of Personality and Social Psychology, 1967, 5, 295-303.

Rorschach, H. Psychodiagnostics. Berne: Hans Huber, 1942.

Rowe, R. R. Daydreaming under stress. Dissertation Abstracts, 1967, 27 (10A), 3322-3323.

Rutherford, B. R. & LaVoie, J. C. Effect of anxiety on children's play and stimulus preference. Proceedings of the 81st Annual Convention of the American Psychological Association, 1973, 8, 61-62.

Sarason, S. S. The measurement of anxiety in children. In C. Spielberger (Ed.), Anxiety and behavior. New York: Academic Press, 1966.

Singer, J. L. Daydreaming: An introduction to the experimental study of inner experience. New York: Random House, 1966.

Singer, J. L. The child's world of make-believe: Experimental studies of imaginative play. New York: Academic Press, 1973.

Singer, J. L. & Rowe, R. An experimental study of some relationships between daydreaming and anxiety. Journal of Consulting Psychology, 1962, 26, 446-454.

Venham, L. L. Development of a self-report measure of anxiety for children. Paper presented at the meeting of the International Association for Dental Research, 1973.

Waelder, R. The psychoanalytic theory of play. Psychoanalytic Quarterly, 1933, 2, 208-224.

Weisskopf, E. A. A transcendence index as a proposed measure in the TAT. Journal of Psychology, 1950, 29, 379-390.

Wright, G. Z. & Alpern, G. D. Variables influencing children's cooperative behavior at the first dental visit. Journal of Dentistry for Children, 1971, 38, 60-64.

BIOGRAPHICAL SKETCH

Lynne Magner McDonald was born in Colon, Panama on October 4, 1949. She attended public school through the ninth grade in Houston, Texas before moving with her family to Mexico City in 1964. She graduated from the American High School in Mexico in 1967 after which she attended Vincennes University and Purdue University. She received a Bachelor of Science degree with highest honors in psychology from Purdue in 1971 and was elected to membership in Phi Beta Kappa while at Purdue.

In the fall of 1971 she entered graduate school at the University of Florida in clinical psychology and received the Master of Arts degree in December, 1972.

Since that time she has pursued the Doctor of Philosophy degree, completing her clinical internship at the University of Florida in August, 1975.

She was married to Thomas A. McDonald of Elkhart, Indiana in 1969.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Vernon Van De Riet

Vernon Van De Riet, Chairman
Associate Professor of
Psychology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Jacquelin Goldman

Jacquelin Goldman
Associate Professor of
Psychology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Eric Jackson
Assistant Professor of
Dentistry

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Lawrence J. Severy

Lawrence Severy
Associate Professor of
Psychology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Audrey Schumacher

Audrey Schumacher
Professor of Psychology

This dissertation was presented to the Graduate Faculty of the Department of Psychology in the College of Arts and Sciences and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

December, 1975

Dean, Graduate School